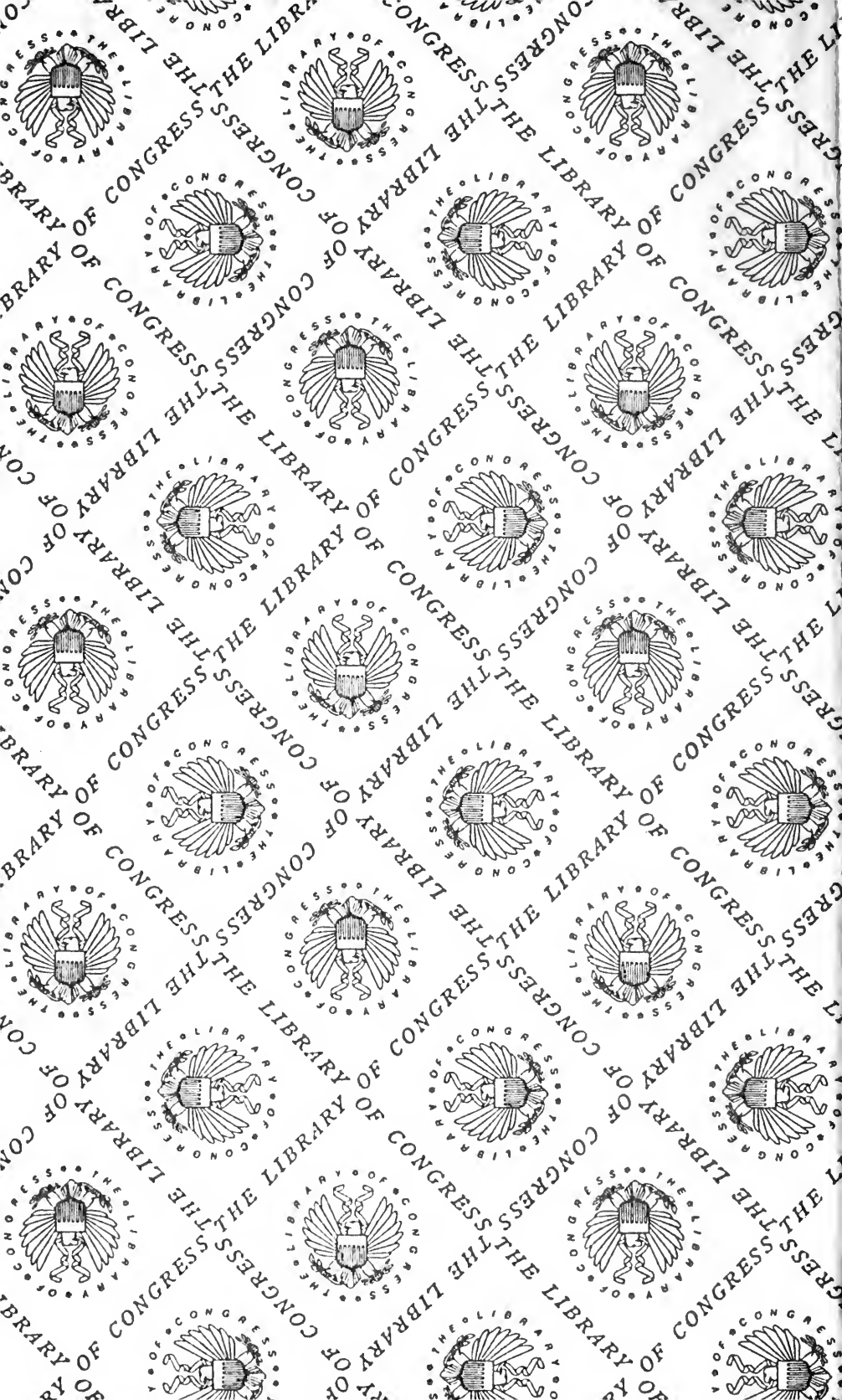
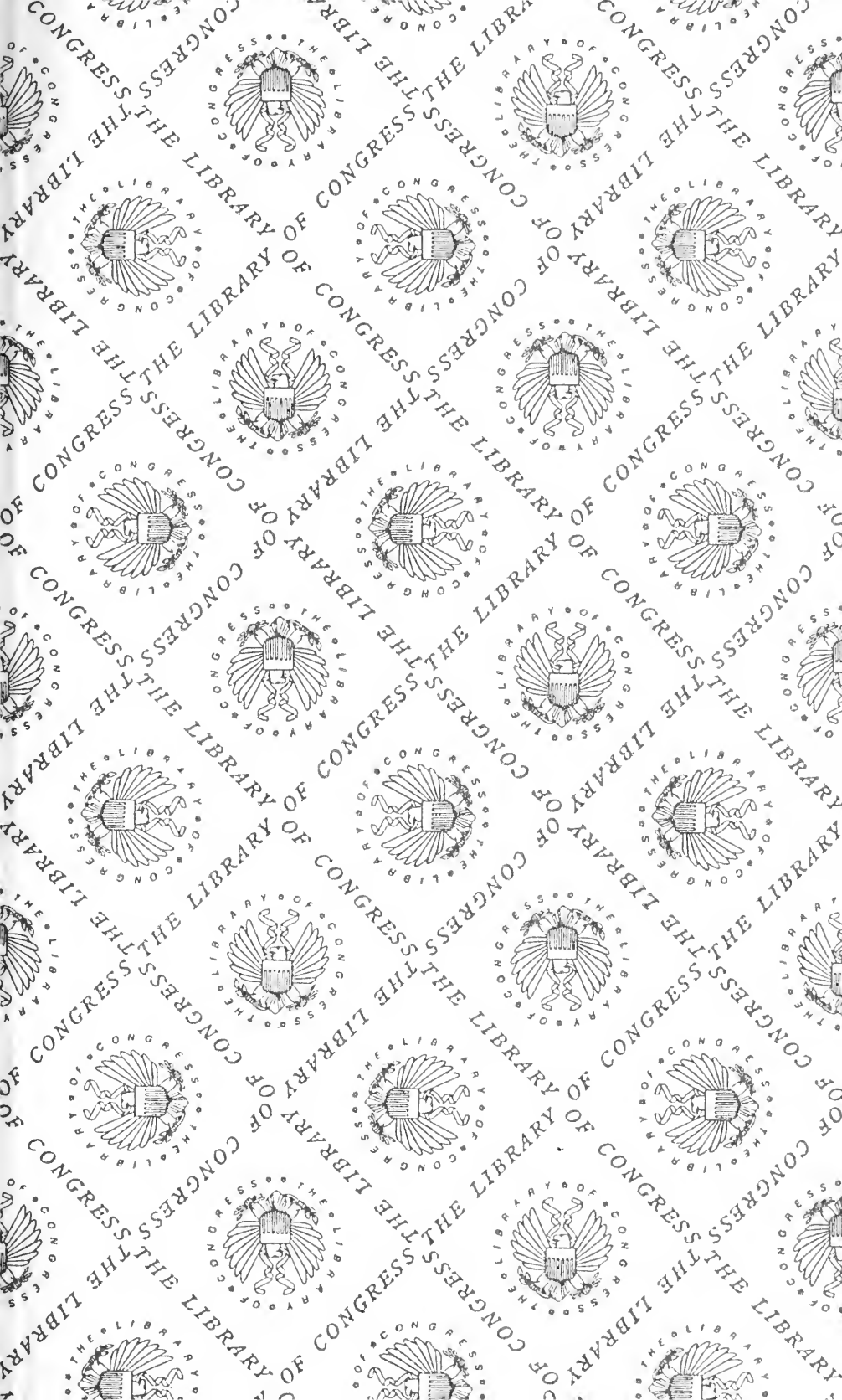


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LECTURES

TO

YOUNG LADIES,

COMPRISING

OUTLINES AND APPLICATIONS OF THE DIFFERENT BRANCHES

OF

FEMALE EDUCATION.

FOR THE USE OF FEMALE SCHOOLS, AND PRIVATE LIBRARIES.

DELIVERED TO THE PUPILS OF

Troy Female Seminary.

BY MRS. ALMIRA H. LINCOLN PHELPS,

(Late Vice Principal of that Institution.)

AUTHOR OF FAMILIAR LECTURES ON BOTANY, ETC.



BOSTON:
CARTER, HENDEE & CO.
1833.

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LATELY PUBLISHED,

LECTURES ON SCHOOL KEEPING. By Samuel R. Hall. Third edition. This work is intended to be a complete school teacher's *manual*, and contains all the necessary practical directions for their observance in the instruction and management of schools. It has been productive of much good, and were it in the hands of every teacher and carefully studied, it would produce an improvement in our common schools, almost beyond belief. So sensible of this are the enlightened legislators of New York, that they have passed an act authorising the commissioner to procure a copy for every district in the State, and it is to be hoped for the cause of education, that the example may be imitated by other States. It has received unqualified praise from all the Journals, and from all the teachers who have examined it.

LECTURES TO FEMALE TEACHERS on School Keeping. By Samuel R. Hall, author of Lectures on School Keeping.

Extract from the Preface.

'The author has aimed to render all the directions *practical*, and make the volume a general directory for properly discharging the responsible duties involved in the office of the Primary Teacher. The work is designed, not merely to be *read*, but to be *studied*; it may also be made a daily manual, during the time devoted to teaching.

INFANT SCHOOL MANUAL, OR TEACHER'S ASSISTANT; Containing a view of the system of Infant Schools. Also, a variety of useful lessons, for the use of teachers.—By Mrs. Howland. New edition enlarged.

The rapidity with which the two first editions were sold, is evidence of the want of such a work as this. This edition has been improved and enlarged, and will be found a valuable assistant to those who are engaged in, or are desirous of qualifying themselves for teaching Infant Schools. It will also be useful to every teacher of young children in common schools or families.

WAITT AND DOW'S PRESS, — BOSTON.



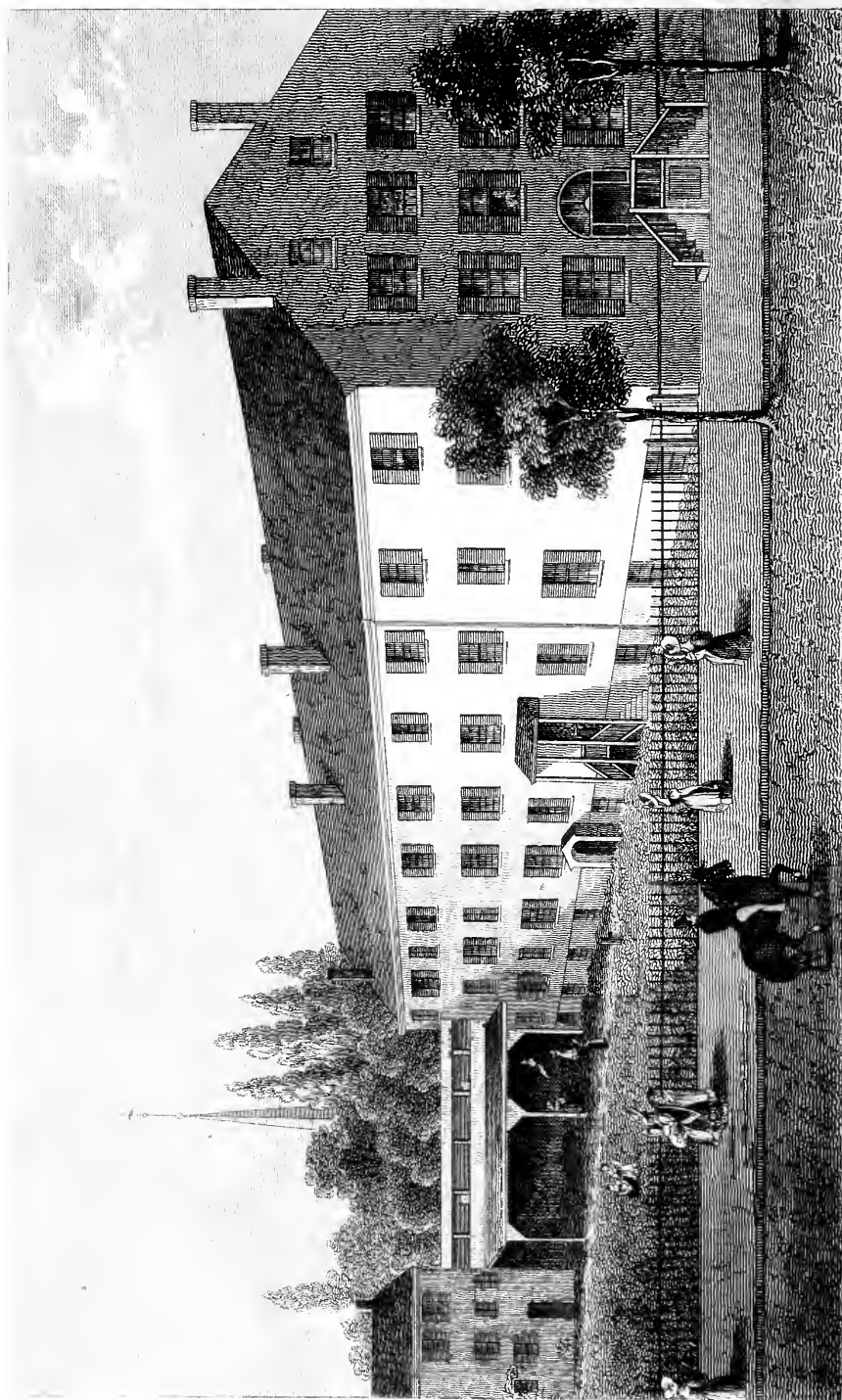


PLATE 100

TROY FEMALE SEMINARY

DEDICATION.

TO MADAME LOUISE S. W. BELLOC,

AND

MADAMOISELLE ADELAIDE DE MONTGOLFIER.

To you, sisters in affection, and united in your efforts to promote human virtue and improvement, associated with the friend and benefactor of America the good Lafayette, in the important care of selecting a national library for your beloved country, the following pages are respectfully and affectionately inscribed by one, who is proud to have been acknowledged by you as a friend and an associate in the cause of education. For this distinguished honor, as well as the affection manifested by you for my beloved sister, during her residence in France, permit me thus publicly to express my gratitude. May the friendship which in so interesting a manner has been commenced between us be elevated and permanent in its nature, as the objects which have given rise to it are noble and imperishable.

ALMIRA H. LINCOLN PHELPS.

Mont Cervus, Guilford, Vermont.

P R E F A C E .

THE following Saturday Lectures were delivered to the pupils of Troy Female Seminary, while the Author presided over that Institution, during the visit of the Principal in Europe, in 1830 and 1831. Although in being revised for the press, they have received alterations and additions, they are now offered to the public substantially the same, as to the plan and execution, as they were originally delivered.

This volume, which comprises the first series of a course of Lectures on Female Education, is principally devoted to subjects connected with *Intellectual Improvement*. It is the author's intention to prepare the remaining series for publication within the ensuing year.

The second series will, in part, be devoted to the consideration of those *Affections of the Mind called Emotions, comprehending our Moral and Religious Feelings, the Duties of Woman in domestic life, as a teacher of youth, in society, and towards her Maker.*

It was at first designed that the whole series should be comprised in one volume ; but the subjects which presented themselves were too numerous and important to be compressed within the small compass at first intended, and there seemed also to be a natural division between the subjects which constituted the whole course.

Although Intellectual Improvement is not in reality to be separated from Moral Cultivation, since both should proceed together, it is more convenient to treat of them separately. Thus we may give the distinct history of

some one kingdom, without carrying on that of another with which it is intimately connected, any farther than may be necessary in the furtherance of our principal design ; but when we have traced the history of the one, we may then commence that of the other.

The object of these Lectures was to awaken in the minds of the pupils, habits of thought with respect to the nature and design of education, and the practical application which ought to be made of its various branches. The young ladies to whom they were addressed were pursuing studies of different kinds ; and it was important that they should know the '*why* and the *wherefore*,' with the broad and general principles of literature and science. Their teachers in the individual classes would no doubt endeavor to point out these ; but every teacher is well aware that by long dwelling upon a particular department of education, he becomes minute, and that there is always danger that the general scope of a science may be lost sight of, in the microscopic views which he is obliged to take. Many a pupil who has studied each page of a text book with close attention, has been found unable to give an explanation of the outlines and general character of the work, or the science on which it treated.

It was intended in these Lectures to exhibit the nature and objects of female education, with outlines of the various sciences connected with it : in nearly all of these the author had at different periods personally instructed, and her views of them were the result of her own experience and observation.

In appearing again before the public as an author, I feel a degree of timidity unknown on former occasions. In my first work, '*Familiar Lectures on Botany*,' my steps were supported by guides who, if not infallible, were de-

serving of veneration and confidence. If I wandered from the path of true science, it was with Linnæus, with Jussieu and Mirbel. If, leaving these guides for a time to converse familiarly with the fair young beings, of whom the flowers of summer are no unapt emblems,—if, pausing to discourse with them of the goodness of that Great Benefactor whose blessings are so profusely shed around our pathway, or to suggest from the consideration of the works of nature and the bounties of Providence, reflections touching our own moral and religious obligations,—still my venerable instructors were patiently bearing with my garrulity, and ever ready to help me forward in my attempt to unfold the beautiful system which arranges the objects of an important part of the kingdom of nature.

In my Dictionary of Chemistry, a work of more severe labor, and less cheered with the glowing hues with which imagination invests the subjects of botanical research, I was secure from apprehension, by the responsibilities of the authors whom I translated, and the approbation and encouragement of two friends of science who kindly encouraged me in my labors, and gave them the sanction of their names.* Under such auspices, I had little reason to fear that even the parts of that work in which I ventured at originality would meet with severe criticism. The call for three large editions of the Lectures on Botany within two years, with the adoption of my Dictionary of Chemistry into academies, colleges, and medical schools, have encouraged me to offer these Lectures to the public.

But notwithstanding so many unexpected encouragements, it is with hesitation that I now unveil to public observation those scenes ever to be remembered, when

* Professors Silliman and Eaton.

surrounded by a numerous assembly of young females,* among whom were my own daughters, and many little less dear to me, I endeavored to impress upon youthful intellects the truths of science, and upon yet unsophisticated hearts the love of virtue and sentiments of religion. Although the partial affection of these dear pupils led them to believe that these instructions might be useful to others, strangers may judge differently; they may view with the cold eye of criticism, attempts to do good which were prompted by a warm heart and zeal to elevate the female character and discharge a sacred obligation.

Those, who with me, feel deeply on the subject of human improvement, and who may perceive errors of judgment, or faults of execution in the following pages, will, I trust, be willing to communicate with me as friend with friend; and such may be assured that any criticism or counsel thus offered, will be gratefully received and acknowledged.

It has been suggested by teachers of experience, that these Lectures would prove valuable assistants in education, by affording a kind of Synopsis for weekly reviewing lessons in the various departments of study, as well as a suitable reading book for young ladies' schools.† It was indeed partly in the anticipation of such an object that the lectures were originally committed to writing, as the author was little confined to notes, but often pursued the train of thought which was suggested at the moment.

Amongst the numerous works on education which are

* The number of pupils was nearly two hundred.

† Among the number of those who have expressed this opinion, I have pleasure in naming Miss Beecher, the respected Principal of the Hartford Female Seminary, to whom the plan of this work was early communicated.

now before the public, the author knows of none similar in plan to this. Abridgements and compilations differ much from compounds, which, though formed of previously existing elements, come fresh from the crucible of mind, bearing upon them the author's 'own image and superscription.'

The names which appear in the dedication of this work may not be extensively known in this country. To those not conversant with French literature, the most distinguished writers are not generally known until time engraves their names upon the records of history. In America, the names of the distinguished women of England are almost as familiar as if the Atlantic did not separate the two countries. The reason of this is obvious; we speak and write a common language, and thought, meeting with no impediment, is wafted across the ocean with a rapidity almost equal to its own operations. Thus the name and writings of Maria Edgeworth, are known to almost every child of our country, while those of Madame Belloc and Mademoiselle de Montgolfier, although no less celebrated in Europe, are by no means familiar to Americans. These two ladies, with a singular devotion of friendship, mutually share in fortune, literary labor and fame.* They have been connected with M. Jullien, one of the most enlightened men of the age,† in conducting the *Revue Ency-*

* Madame Belloc in a letter to myself, says, '*J'ai pour aide une autre moi, meilleur, que moi, et plus capable d'accomplir, c'est une amie, une soeur d'adoption, avec laquelle depuis douze ans, je suis à moitié de tout; peines, plaisirs, travaux, familles nous avons tout en commune, c'est en son nom autant qu'au mien que je vous remercie de votre lettre, et que je réclame un peu de votre amitié; j'aime à penser qu'avec vous, Madame, nous nous trouverons comme avec Madame Willard l'écrit d'une longue et ancienne amitié par de profonds rapports de pensée et de goût.*'

† For an interesting sketch of this *Savant* see a late communication of Mr. Willis, for the New York Mirror.

clopedique, a distinguished Literary Journal of Paris ; they take a deep and active interest in many of the schools and charitable institutions of France, and the literature of their country is enriched by many of their valuable and joint productions.

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LECTURES.

LECTURE I.

Introductory.

MY DEAR PUPILS: With feelings of deep anxiety and a solemn sense of my own responsibility, I now address you. We have just parted with her, from whom I as well as you, have been accustomed to receive advice and instruction. Every receding wave is carrying her from her native country, and her loved and cherished institution. The affectionate and admonitory words which she spake at parting are yet fresh in our minds; and we, like the Ephesians when St. Paul tore himself from them, sorrow most of all, lest we may see her face no more. But let us hope that a life on which so much depends may be preserved, and that a mind whose efforts have been so greatly blessed for the improvement of her sex, may be restored to us with renewed vigor, enriched by observations of the state of female education in foreign countries, and with increased facilities for usefulness in her own. Let us show our love to this dear friend, not by vainly regretting her absence, but by remembering her words and following her precepts.

I see by the affectionate beamings of many a youthful countenance, that you are ready to give your confidence and love to one whom Providence has called to fill a station to which her own ambition was far from aspiring. To me, my dear girls, the change is great, from the retirement of domestic life, to find myself within a few short years, called to preside over a public institution, numbering nearly two hundred pupils, many of whom are al-

ready distinguished for literary attainments, to be the responsible head of so numerous a family, and to find it my duty to direct and advise a body of teachers, combining experience and learning, with talents of a high order.

It is with humility, in view of my own deficiencies, that I speak to you of these responsibilities. I wish you to know and feel the cares and anxieties of my situation; and may I not count upon each one of you as a friend, ready to give me your encouragement and aid upon all occasions when they can be useful. These occasions, my dear pupils, will be many: to you I must look for industry, to sustain by your improvement the high character of the institution. You must aid me in maintaining good order and in supporting discipline; you must, by your obedience and attention to the teachers, render their situations agreeable; and finally, by your affectionate and encouraging behaviour, support me in the discharge of my duties.

In consenting to take upon myself the charge of this institution during the necessary absence of its Principal, I have done what was demanded by a sense of moral obligation, as well as by sisterly affection; and in the discharge of my duties, I must look for guidance and support to Him to whom we owe all our intellectual faculties, the physical power to execute what the mind dictates, and who will not require more of us than he will enable us to perform.

In pursuance with the custom of the late Principal, I shall continue to devote a portion of time, on each Saturday, to giving general instruction on subjects connected with literature, morals and religion. In these Lectures I shall consider the nature and object of education, the various branches of study here pursued with their practical application, female manners and accomplishments, the peculiar duties of woman in her domestic relations, towards society, and towards her Maker.

It is of vast importance that you should entertain just views of the bearing which the ideas you now gain, and the habits you now form will have upon your future destinies both for time and eternity. As I look around upon the young and happy faces before me, and consider the

changes which a few years will produce, my emotions are too powerful for expression. I see in the gay, unreflecting girl, the future wife, the mother, and the candidate for immortality, having power not only over her own destiny, but capable of wielding vast influence over other immortal beings. Impressed as these solemn truths are upon my mind, I may at times, seem to expect from you too much seriousness and reflection, at an age when gaiety and thoughtlessness are so natural.

Far be from me the wish to check the spontaneous cheerfulness of your young hearts, to see you sorrowful and desponding, or to expect in you an unnatural precocity of judgment and forethought. The world will soon enough change the buoyancy of youthful glee into heaviness. Enjoy then this spring time of your existence, this morning of your life ; but enjoy with moderation, and spare something from the exuberance of your emotions, to soften and cheer the sober and pensive season, which, should your lives be spared, will as assuredly follow, as evening follows morning or as spring is succeeded by autumn. Should you see a group of happy children, sporting near the border of some dreadful precipice, which they in their childish glee heeded not, would you think it unkind to check them in their mirth, in order to point out their danger ? or if one should chance to have strayed to the verge of the precipice, would you hesitate to seize him even somewhat roughly, in order to save him from destruction ? Think it not, then, my dear girls, unkind in those, who by the light of experience see dangers to you invisible, if they raise a warning voice, if they give a temporary check to your gaiety, in order to avert evils which they see impending over you. The eye of experience sees before you trials of virtue, affliction, pain and death ; and ‘ after death cometh the judgment.’ In view of these solemn and momentous interests, I cannot but watch with deep anxiety and solicitude, even your slightest actions ; these, though individually of little consequence, appear of vast importance when considered as indications of future character.

All human beings must suffer pain, and sorrow ; but on woman do the evils incident to human existence fall with

peculiar severity. Our hearts are sensitive, we are easily elated, or depressed ; the delicacy of our nervous system, renders us subject to a thousand agitations to which the other sex, from greater physical strength and more firmness of nerves are exempt. We are subject to caprices, and need to be fortified by intellectual discipline, and above all, by religious principles to enable us to overcome the weaknesses to which our minds, owing to a peculiar physical organization are subject.

How much is the delicate frame of woman called to endure ! Pain and sickness ;—and, what is more trying to the mind than personal suffering, we must experience the anguish of watching over the distresses of others ; of witnessing death in its triumph over the objects nearest to our affections. Yes, you, whose hearts now beat high with expectation, who feel that the world is maturing roses for you to pluck, even you, my daughters, are to find thorns springing up before you. You are destined to watch over the couch of sick and dying friends, parents, brothers and sisters, and perhaps to perform the last sad offices for some of these your companions who are now before you glowing with health and beauty—some of you will mourn over dying children, some will experience the sorrow and desolation of widowhood ; and all, sooner or later, will taste of death, the common lot of mortals.

In uttering these predictions, I am not arrogating to myself a supernatural foresight ; life, with some slight variations, will be to you, as to those who have gone before you. The smaller circumstances, the filling up of the picture of your lives, time only will exhibit, but the outlines are too darkly and plainly marked not to be manifest to the eye of experience. Within the last seven years, during which time I have been connected with this institution, many pupils whom I have addressed from this place, and who like you were full of hope and anticipation, have gone forth into the world, only to prove its vanity and falsehood. Some have felt the bitterness arising from the consciousness of having bestowed their young affections upon unworthy objects, some have pined in secret over a hopeless attachment, while others after hav-

ing been flattered and worshipped as angels, have been left to the heart-rending condition of deserted and neglected wives. Some, who to appearance were happily settled in life, have been called to leave beautiful and elegant homes, the arms of fond affection, with all the charms of domestic life, and to lie down in the grave. The most devoted love, the most extensive wealth,

‘Could give no more
Than earth enough to make their narrow bed.’

Even the young and beautiful, when the seal of death is upon her, is given up to corruption, and the worm feeds sweetly upon its victim.

Is there not enough, then, my beloved pupils, in view of the various trials, which are incident to woman, and especially in view of the final destination of all human beings, to bring you to reflection? And, oh that you may lift up your hearts in prayer, and beseech your Heavenly Father to fit you for the performance of your duties in life, for the patient suffering of your trials, and for the enjoyment of Heaven.

‘Woman’s lot is on you! silent tears to weep
And patient smiles to wear through suffering’s hour,
And sumless riches from affections deep
To pour on broken reeds—a wasted shower!—
And to make idols and to find them clay,
And to bewail that worship! therefore pray!—
Earth will forsake—Oh, happy to have given
Th’ unbroken heart’s first fragrance unto Heaven.’

LECTURE II.

Different views of young persons respecting the object of education. Four classes of pupils: 1st, the gay and fashionable; 2d, the idle and careless; 3d, the moral; 4th, the pious.

It is of great importance to you all, that you should well understand your own characters, the views which

you entertain upon the subject of your present advantages of education, and the preparations you are making for futurity, both as it respects this life and that which is to come. And yet, how few young persons do reflect deeply upon these things; how often are they careless of the seeds which may be taking root in their minds. What should we think of a farmer, who was either idle in spring, or indifferent whether good seed, or such as would bring forth useless, noxious weeds, were sown upon his grounds? But what is the product of a farm, compared with the fruits of the human mind? The former transient and perishable; the latter treasured up in the great record of human actions, and made the criterion by which the destiny of the immortal soul is fixed for eternity.

Let us suppose each one of you, asking herself for what purpose am I placed in this institution, and how am I improving the advantages here offered me? After searching into your own hearts, let conscience make her report; happy indeed are those who will not stand self-accused at that tribunal of moral feeling, which the Almighty has established in your own minds for the regulation of your conduct.

The different individuals now before me, with respect to their peculiar views, motives, and characters, may, perhaps with propriety be arranged in four classes. Do not, my dear girls, think me severe in what I am going to say. Like the physician, I must consider the nature of your maladies, in order to point out the remedies. Were you diseased, without any means of cure; had Providence cursed you with certain moral stains which were irrevocably fixed, I 'would lay my hand upon my mouth,' and utter no words of reproach to a misery so hopeless. But blessed be God, a renovating principle is ever ready to operate, if human beings will yield themselves to its influences. Conscience, like a faithful monitor, is ever warning us of our own danger, and the grace of the Holy Spirit is given to guide us in the path of virtue and happiness.

I observed that you might, with respect to your present characters, be considered as constituting four distinct

classes ; they are the following ; 1st, *the idle and careless*, 2d, *the gay and fashionable* ; 3d, *the moral* ; 4th, *the pious*.

I shall first consider the *idle and careless*, those who think only of present gratification. This class, I am sorry to say, is but too numerous among school-girls. Many of you have been nursed in the lap of affluence and ease, accustomed from your infancy to all the gratifications which parental fondness, aided by wealth, could bestow ; alas ! how little does the doating parent reflect when tenderly nurturing a beloved child, that he may be administering a slow poison, which will infuse itself through the whole moral system, and in future years render his child imbecile and degraded !

Luxury has a most decidedly injurious effect upon our moral natures. Do you doubt this ? Look into the history of nations and of individuals, and you will see them almost uniformly corrupted by luxury. The Romans were virtuous until enriched by the spoils of vanquished nations. Our own ancestors, in the primitive poverty and simplicity of the early days of our country, showed themselves capable of high and noble actions ; their descendants enriched by trade, commerce, and manufactures, are, it is to be feared, degenerating from the lofty character which was exemplified in the fathers of the revolution, and in their unostentatious wives and sisters. And yet wealth does not, necessarily, corrupt the mind ; when properly used, it furnishes the means of doing good to others ; of assisting to promote the noble designs of such, as possess vast benevolence, without the pecuniary means of carrying their plans into effect. It is by wealth that we can obtain the best means for our own improvement, in the purchase of valuable books, in visiting interesting works of nature and art, in gaining assistance from the talents and information of others, and in bestowing leisure for mental cultivation.

But how do the class of pupils, of whom I am speaking, view the wealth which their parents are careful shall follow them to this retreat ? How do they spend the money thus lavished upon them ? Besides furnishing themselves on all common occasions with

those eatables which are so injurious to health and consequently to mental energy, we see some descending even to bribe domestics to purchase dainties, at times and in a manner forbidden by the rules of the institution? How are holidays spent by such a pupil? in writing letters to gladden the hearts of absent friends, in looking into the state of her wardrobe, and repairing such articles of dress, as may need it; in putting her room in order, in paying and receiving the visits of an interesting and intelligent friend, in the perusal of instructive books, or in anticipating some of the coming school exercises in order to be prompt in all her duties? Would that I might believe that thus all of you did spend the hours which are at your own disposal; but however unpleasant the thought, it cannot be disguised that such seasons are very differently passed by the idle and careless.

Should we enter the room of such a pupil on a Wednesday or Saturday afternoon,* we should probably see her sitting by a basket of nuts, fruit, or confectionary, her dress slatternly, her hair disordered, and the appearance of the room in perfect harmony with that of its mistress. Dismissing this disgusting picture, let us consider the effect of such sensual indulgence. Our young miss awakes in the morning with a head-ache, she goes to the breakfast-table with a loathing for simple and wholesome food; when the bell rings for study, she sits down with a listless and vacant mind, opens a book, looks upon the page, and perhaps reads the words, but if she attempts to investigate a subject which requires any effort of mind, she feels herself inadequate to the task; at length she appears before her teacher with the degraded sense of her own mental inferiority, and stammers out an excuse about the head-ache, want of time, &c. We might follow the same pupil to the public examination, and see her exposing her ignorance to the chagrin of her friends, the mortification of her teacher, and her own confusion. I have already dwelt

* At these periods the regular exercises of the institution are suspended.

longer upon this character than I intended ; much more might with truth be said, to heighten its deformity, but I gladly turn from it. I am not willing to admit, even to myself that any one of you have sat for the picture so far delineated : but if any can see in it her own likeness, let me hope that she may be induced to throw aside these habits so injurious to mental improvement, and attempt to render herself worthy of a dignified and honorable station in society. At the tender moment of parting with a daughter, to leave her among strangers, a father is very apt, as a last act of kindness, to bestow a liberal amount of pocket-money ; and the mother and sisters often feel themselves bound to show their affection by enclosing money in letters.*

The next class of pupils which we are to consider includes the *gay and fashionable* ; those whose highest object in the attainment of an education is to enable themselves to *show off* in circles of fashion, *to seem to be* amiable and learned, instead of being so. We often see such exhibiting, in the pursuit of certain branches of education, a becoming diligence : they are faithful to their lessons in music, dancing, drawing ; and, stimulated by the wish of making a figure at examinations, they are sometimes found among the best scholars in literary branches. In attendance upon a bible class or public worship, such pupils are generally remiss, and in the performance of moral duties, we often see a great deficiency. They are usually wanting in meekness and lowliness of mind ; if a school-mate is unfashionable in her dress, or rustic in her manners, she is condemned to neglect and contempt ; or if a teacher, occupied with higher objects than personal decoration, appears dressed in a manner not correspondent with the latest fashions, too often do this class of pupils show what is their standard of merit by pertness and disrespect. We shall consider hereafter the tendency of an undue regard to fashion and fashionable accomplishments. In the mean time, may those who are conscious of erring in this respect, think seriously upon the subject,

* It is to be hoped that the exposition of the injury caused by these supplies may deter some from such ill-judged kindness.

and strive to gain more just and elevated views of the concerns and objects of this probationary state.

But there are a third class of pupils who have a higher standard of merit than fashion and who are above the gross enjoyments, the listless *ennui* which marks a certain class of school-girls. There are those, who, early imbued with virtuous principles, and a regard to moral obligations, would grieve to be found wanting in any duty towards their parents, their teachers, or their companions. Such pupils are exemplary in their deportment and obedient to rules; they endeavor to make the most of the advantages bestowed upon them; and like the young man, who, after enumerating his many virtues, asked our Saviour, 'what lack I yet?' such may complacently suppose they are doing all that can be required of them; and yet, one thing they lack; 'He builds too low who builds beneath the skies.' There is a higher and a holier motive than even duty to a parent or a friend, or benevolence to our fellow-creatures; piety operating upon the heart is the vital principle which gives life to all its virtues.

The fourth and last class of pupils are those, who, influenced by the hopes of the gospel, act not with reference to this world only, but to eternity. I am aware that between the two latter classes of pupils it is often difficult to discriminate; and far be it from me to sit in judgment upon the motives of any—to say of any individual pupil, she is merely a moralist, and of another, she is pious. God, who knows the secret motives of all, seeth those who serve him in sincerity and singleness of heart. 'Not every one that saith Lord, Lord, shall enter into the kingdom of heaven, but he that doeth the will of my Father in heaven.' It is not to those who are loud in professions, who forsake their own duties in order to watch the conduct of others; it is not to those who virtually say, 'Stand by, I am holier than thou,' that we look as the patterns of christian character. Blessings are pronounced upon the meek and lowly, the poor in heart, the peacemakers, and they who suffer for righteousness' sake.

The members of this institution who profess to be followers of Christ, ought to be aware of their high responsibilities. Your example may invite others to seek that

religion which they see producing in you, good fruits ; or it may disgust them, if accompanied with forbidding and unpleasant manners. To each of you, the question should often arise ; What should be my walk and conversation under my present circumstances ? how may I, while here, adorn the religion I profess ? Surrounded as you are by gay, and often thoughtless companions, by those who cannot appreciate your motives of action, it may seem to you a subject of doubt, whether you should not wholly, withdraw yourselves from society, rather than incur the hazard of lowering your own standard of duty, or of losing your own seriousness amid surrounding levity.

The scriptures command christians to come out from the world, to separate themselves from it. Yet our Saviour himself familiarly associated with publicans and sinners—he went to their entertainments and conversed with them in public places. At Cana of Galilee we find him attending a wedding, and promoting the festivities of the occasion, by miraculously changing water into wine. The Pharisees indeed reproach him for these things ; they follow him in his hours of social intercourse, and point the finger of scorn, because he associates with sinners ? Yet the meek and humble Jesus is not deterred from his purpose. We see him seated, not among a few, who already esteemed themselves righteous, but with the multitude, we hear him in mild and gentle accents telling them to knock and the door of mercy shall be opened, to ask and they shall receive, to repent and they shall be forgiven, to go in peace and sin no more. His kind and attractive manner first drew the heart towards him, and then to the doctrine which he taught.

We are not then to suppose that our Saviour intended his followers should separate themselves from the world by ceasing to hold intercourse with it ; we cannot believe that the Christian, as some zealots teach, is in the performance of his highest duty, by withdrawing from the world and burying himself in a cloister, in order to give his heart wholly to God and the services of religion.

How, then, you may ask, are we to separate ourselves from the world ? We answer, by piety, meekness, and readiness to do good to others, and in all things to adorn

your profession ; it is thus that you should *distinguish* or separate yourselves, being 'while in, above the world.' You need not fear to follow the example of your Saviour, who mixed with the multitude, that he might do them good ; and although you have not the power, miraculously to cure diseases, you may do much towards healing the moral diseases of your thoughtless companions, by seeking occasions to give them good counsel, and proving by your own conduct that 'the ways of wisdom are pleasant, and all her paths peace.'

This institution has at all times numbered among its members many who professed to enjoy the hopes and promises of religion. These have exerted a vast and salutary influence upon other pupils ; yet had they always considered their obligations to let their 'light so shine, that others, seeing their good works, might glorify their Father in heaven,' their influence might still more extensively have been felt. Some have yielded too much to the example of the merely fashionable, the gay and the trifling, and instead of firmly standing upon the ground of christian duty, and refusing to countenance any thing contrary to christian obligation, they have seemed almost fearful of being recognized as professors of religion, and with the disciple who denied his Lord, to say by their practice, 'We know not the man.'

In some cases, pious and conscientious pupils, disgusted with the levity and frivolity of many of their fellow students, have coldly withdrawn from any intercourse with them, and in consequence have gained the reputation of being morose and unamiable. A feeling of mutual jealousy and dislike has thus taken the place of that confidence and affection which ought to prevail among members of the same institution.

You will at once see the evils which must result from such a state of things ; and permit me to hope that the pious members of the institution, will unite with me in endeavoring to lead the thoughtless to reflection, and to elevate the tone of moral and religious feeling among us. And that you may be enabled to be useful, strive to make yourselves agreeable ; join in innocent recreations, and do not despise external graces, or a suitable attention to

dress and accomplishments. Be mild and courteous, dignified and exemplary, and you will command an influence, which neither wealth nor fashion can gain; an influence over the hearts of those around you, and thus have it in your power to arouse the careless and idle to a sense of duty, to enforce upon the gay and thoughtless higher and better motives, and to convince those who depend merely on a cold morality, that human virtue is but a shadow when unaccompanied by religious affections.

St. Paul, like his divine master became 'all things to all men, that he might by all means save some.' 'Never,' says an English writer,* 'was man more deeply versed than he, in the knowledge of the ways which lead to the human heart; and never was man more disposed by principle and by feeling to apply that knowledge to the benevolent purpose of opening the heart to the influence of the truth which saves and sanctifies. Who would attempt to portray the character of Paul (or who would recognize the likeness if attempted) without the kindness, the gentleness, the suavity and sympathy which he himself copied from the model of absolute perfection.' May you my dear christian pupils, in these respects, imitate St. Paul, even as he imitated Christ.

LECTURE III.

Education, its Nature and Object.

THE true end of education, is to prepare the young for the active duties of life, and to enable them to fill with propriety those stations to which, by Providence, they may be called. This includes also a preparation for eternity; for we cannot live well, even in this world without those dispositions of heart which are necessary to fit us for heaven. To discharge aright the duties of life, requires not only that the intellect shall be enlightened, but that the heart shall be purified. A mother does not perform her

* Rev. H. F. Burder.

whole duty, even when in addition to providing for the wants of her children, and improving their understanding, she sets before them an example of justice and benevolence, of moderation in her own desires, and a command over her own passions: this may be all that is required of a heathen mother; but the christian female must go with her little ones to Jesus of Nazareth, to seek his blessing; she must strive to elevate the minds of her offspring by frequent reference to a future state; she must teach them to hold the world and its pursuits in subserviency to more important interests, and to prize above all things that peace, which as the world giveth not, neither can it take away:

Thus comprehensive, my dear girls, is education; *it consists in training the body to healthful exercises, and elegant accomplishments, in cultivating and developing the mental powers, in regulating the passions, and above all in forming religious habits.**

Many appear to think that the whole business of a teacher is, to impart instruction in the different branches of learning. This is far from being the most anxious concern of one who realizes the importance of early discipline of the passions, and of early associations upon the moral character. Instruction, or the communication of literary and scientific knowledge, is indeed, but a small part of education; for a person may be learned and yet have been very badly educated. The great thing is to send forth the young fitted for the various exigencies of life, and did we know what would be the future situation of each one of you, we might proceed somewhat differently in our efforts for your improvement, but it is uncertain, which of your attainments in literature, and science, or which of your personal accomplishments will be most useful to you

* M. Jullien, in his 'Essai General d' Education,' says, Education is an apprenticeship for life; its true end like that of existence is well-being or happiness. But although all men either by reflection or instinct seek this end, although all desire to be happy, most are ignorant of what happiness really consists in, what are the elements which compose it, and the means of obtaining it. Reason, observation and experience appear to point out three essential and necessary elements of happiness—health of body, elevation of soul and cultivation of intellect.

hereafter ; whether they are to be exercised only for the improvement and delight of the social circle, or to be the means of gaining your own support and that of others, who may be dependent upon you.

How many females, who, in youth had cherished the expectation of filling a splendid station in life, have been reduced to the necessity of exerting their talents in order to gain a subsistence. You are all, probably, acquainted with such ; you may perhaps have heard some of them say, that those trials, by throwing them upon their own resources, had developed the latent powers of their minds, and by divesting them of external advantages, had rendered them more intrinsically valuable. Those of you, who now enjoy the light of prosperity, may have no fear that your situations will ever change ; you may not conceive the possibility of suffering those reverses, which you have witnessed in others. But, riches are proverbially fleeting ; a storm at sea may destroy the freighted vessel on which your parents depend for wealth ; fire may consume their property ; the failures of others may involve them ; the channels of trade may be diverted ; manufacturing interests may decline, or landed estates may sink in value ;—upon these, and a thousand other chances, does the uncertain tenure of worldly wealth depend.

Some of you may expect distinction on account of friends high in official stations, but long before you are prepared to take an active part in life, they may have sunk into obscurity. In this country, of all others, the distinction which arises from public offices is the most transient and uncertain. We see a man holding the highest offices in the government ; and his family courted and flattered on account of the power and influence which this gives him. We look again, and this same individual, by a change of public sentiment, or some new movement of the political machine, is deprived of his honors, his family are neglected and forgotten, while their pretended friends are bustling onwards to pay their court to the rising fortunes of another, who becomes for his short hour 'lord of the ascendant.'

How important, then, that all of you should provide yourselves with resources against a day of change !

These resources you are now in a situation to secure, in the attainment of that knowledge and those accomplishments, which the present wealth of your parents place within your reach. The above suggestions should also induce those who possess present advantages, to treat with attention such as are less favored by fortune, but who deserve respect for their morals and talents, and who may be destined to future eminence.

There are among those who now listen to me, some who have early tasted affliction; some to whom adversity is familiar; these, perhaps, have been accustomed to regard themselves as destined to glide through life in obscurity, unnoticed and unknown. But the tempest may have bowed you to the earth only that you may arise strengthened and invigorated. You have seen a slender plant drooping its head and lying low beneath the blast; but the storm passed, and the plant raised itself up, exhibiting new verdure and strength. Even so it may be with you; the clouds which darken your young days may clear away, and a brighter sky reveal to you paths of usefulness and honor. In your future prosperity, you may be able to assist by your bounty, and honor by your notice some of those who now pass by you with neglect. Take courage, then, and remember that to a certain degree, especially in our own country, every one is, in a degree, the 'artificer of his own fortune.'

Can we find no cause why the children of the rich, setting out in life under the most favorable circumstances, often sink into insignificance, while their more humble competitors, struggling against obstacles, rise, higher and higher, till they become elevated in proportion to their former depression? Thus you may have seen a tree wither from excess of nourishment and care, while the mountain pine, neglected and exposed to fierce winds and raging tempests, took strong root, and grew into a lofty tree, delighting the eye by its strength and beauty. If we look to our state legislatures, our national congress, and the highest executive and judicial offices in the country, we do not find these places chiefly occupied by those who were born to wealth, or only taught the pride of aristocratic distinctions. Most

of the great men of our country have made their own fortunes; most of them began life, knowing that they could hope for no aid or patronage, but must rely solely upon the energies of their own minds and the blessing of God.

Ask the officers of colleges, which of their students are most distinguished for morality and talents—they will not answer that these are usually the sons of the rich and the great, those who feel that they already possess sufficient recommendations to the favor of the world;—no, we shall be told that the highest places are generally filled by such students as are struggling against difficulties, in the acquisition of that intellectual wealth which they prize above all earthly blessings, and by means of which they hope to render themselves respected and useful. Similar facts may be witnessed in female institutions: we need not look beyond our own walls to see instances of minds debased and enervated, by the consciousness of wealth, and the idea that this alone can procure honor and respect. But can you feel esteem for a fellow pupil, who, spending her time in idleness, exhibits in her conversation and school exercises a vacant intellect? And when such an one shall go out into the world, and meet with intelligent men and women, will her money compensate for her want of knowledge? True her society may be courted by the mercenary; but she cannot avoid perceiving the motives which influence them. Could we, my dear pupils, read the hearts of many who live in splendor, we should see them writhing under the mortifying consciousness of their own real insignificance.

Some of you may be ready to exclaim, is wealth then a curse, and are we to esteem ourselves less fortunate, than if we were poor and depressed? Far be it from me to teach you to be ungrateful for the blessings bestowed by Providence—as blessings should you consider wealth and honorable connexions;—but remember too, that superior privileges lay upon you greater responsibilities. I am happy to say that, in this institution, many of its most exemplary and intellectual pupils have been young ladies of high expectations; and when we find wealth little prized for its own sake, valued chiefly for the opportunities

it affords of acquiring knowledge, and rendering its possessor useful, we feel that the character which exhibits this elevation is truly deserving of our regard.

You perceive how wide and extended a field is that of education, involving, as it does, your temporal and eternal interests. 'Get *wisdom*,' says the wise king of Israel, 'and with all thy getting, get *understanding*. When *wisdom* entereth into the heart, and *knowledge* is pleasant unto thy soul, *discretion* shall preserve thee, *understanding* shall keep thee. They will hear and increase in *learning*, and they that have understanding shall attain unto *wise counsels*. The *knowledge* of *wisdom* shall be sweet unto thy soul; and when thou hast found it, there shall be a *reward*, and *thy expectation shall not be cut off*.' The *knowledge* which you are to gain is as various as are the works of God, and the laws of which govern these works. The *wisdom* of which the sacred writer speaks, implies something more than the knowledge of human sciences;—the control and right direction of our passions, the knowledge of our own hearts, and above all, the knowledge of God, constitute true wisdom.

While you are making acquisitions in the various branches of study, or gaining knowledge, do not neglect to seek that wisdom, without which knowledge is worse than useless. Talents and learning without wisdom are like fire or instruments of death in the hand of a madman; desolation and destruction to all that is good and truly valuable in morals and religion mark the footsteps of minds thus balanced. They are the moral Siroccos which, with blighting influence, occasionally sweep over the intellectual world. How sickening to our moral nature, to behold one of the noblest works of the Creator, a human mind, employing its high powers in cursing its fellow beings by leading them insidiously from the paths of virtue! or with the boldness of the fallen angels, openly daring the Almighty by trampling on his laws, and calling on others to follow its impious career! Such has been the course of some whose infectious writings come to us, stamped with the seal of fashion. Talents have been too blindly worshipped, and the fearful tendency of some works of genius has been too often unseen, amid the splendid coruscations of intellect which have accompanied them. But

the lightning is not less dreadful for its brilliancy, nor the Kalmia less poisonous for the splendid beauty of its coloring. To be *badly great*, is to be cursed indeed. It is indeed commendable to desire to be great, but we should desire to be *greatly good*. It is true, all cannot be great, but every human being can be good.

Our object in the following Lectures, will be to consider how you may best attain those qualifications which will fit you for the duties of life, and for enjoying happiness hereafter. You who listen to me are all gifted by the Great Creator of mankind with rational and immortal minds. But a few years ago, you were thoughtless, and gay children. You do not remember when you first began to think ; that period is involved in as much mystery as the darkness of the grave. The dawning of the human intellect, like that of the natural day is gradual and undefined. Memory, straying in the twilight of childhood, imperceptibly finds herself lost in the darkness of infancy. That children think much, and admire the bright and beautiful objects around them, long before they can by words express the operations of their minds, is plainly manifested : we have no reason however to believe that infants are moral agents. It is when the child begins to inquire, ' What am I ? who made me ? and for what purpose am I created ? ' that he becomes an accountable being.

The child looks upwards ; he beholds the glorious sun and moon, the brilliant canopy of heaven glittering with its spangled myriads, he looks upon the earth, and sees the majestic mountain, the expanse of waters, he beholds the sweet flowers, which seem to speak to his heart by their fragrance, no less than to delight his eyes by their beautiful and delicate coloring ; he contemplates the towering oak and the verdant carpet beneath his feet, he listens, and his ear brings to his soul the rush of waters, the dashing of the ocean, the murmur of the rivulet, and the gentle sighing of the breeze. The animal creation fills his heart with joy, the singing of birds, the meekness of some domestic animals, and the swiftness and beauty of others, all strike his observant mind. But with still more interest does he view the intelligent beings around him

That lovely and patient one, whose smiles kindled the first emotion in his young heart, whose gentle bosom had been his pillow in suffering and in joys; the many kind friends who have been wont to administer to his wants, all are around him, and he feels that it is pleasant to be alive, to experience so much kindness, to behold so many grand and beautiful objects, and to enjoy within himself the sportive glee of his heart, and the bounding elasticity of his young limbs.

A few more years, and the season of childhood is over—the splendid beauties of the intellectual world then dawn upon the youth, and his heart beats high with new and delightful emotions. But still a few more years, and the scene is again changed; the friends of his youth are gone—some have been taken by death, and the cold heartlessness of the world has withered the affections of others. His own frame has lost its vigor; the silver locks, the dim eye, and the tottering step mark the period of old age. Nature herself seems to be growing old; the sun has risen upon many of his troubled days, and the moon has witnessed wearisome nights. He turns from these things which remind him of his frequent disappointments, and sighing, exclaims ‘Oh that I had wings like a dove, then would I fly away and be at rest.’ Death which had once appeared so terrible, is now by the christian welcomed as the harbinger of peace, as the entrance into a new scene of existence, where friends will never part nor know distrust, where, sinless and happy, all the better feelings of the heart will strengthen and expand, until man shall become perfect and glorious, as the angels now are.

Since this is our destination, to live on earth a few revolving seasons, and then to die and to be renewed in a state of never-ending existence, let us, while preparing for life, keep in view the great end for which life is given, and endeavor ‘so to pass through things *temporal*, that we lose not the things *eternal*.’

LECTURE IV.

Private and Public Education.—Public Schools.

MUCH has been said and written on the most proper mode of conducting female education ;—some have contended that girls should be brought up under the watchful eye of maternal care ; while others have considered the emulation which springs up where there is rivalry, to be important, if not necessary, to the full development of the mental powers. Whether a young lady remains with her mother during the period allotted for her education, or whether she goes abroad, the character of the latter will depend much upon that of the former. The daughter's ideas of dress, of expense, of what qualities are to be most respected and valued in others, and her religious impressions, all will, in some degree have taken, their color from this earliest guide.

It would seem that of all others, a mother was the most proper person to superintend the education of a young female. The maternal watch is vigilant and active : none else can feel the deep and anxious solicitude which marks a mother's care ; and yet this very anxiety, by becoming too intense, may be injurious to the child. The quick imagination of the parent seizes upon the most trifling indications of future character, and she is alternately agonized with fear or delighted with hope. These strong emotions are not favorable to a steady and even course of education ; for as one or the other feeling prevails, there is danger of trifling actions becoming the subjects of inadequate blame or praise.

It would seem as if in the shade of domestic life, and under the care of a wise mother, a young female would blossom into maturity, lovely and intelligent and fitted for the discharge of the various duties, which may hereafter devolve upon her. This idea has been a favorite one with the poet and novelist, who have delighted in painting their heroines as combining all the simplicity of infancy itself, with the most court-like and elegant manners ; as entirely ignorant of the world, and yet know-

ing all of it that is valuable ; as amiable and docile, without ever having suffered restraint ; as generous and disinterested, and yet knowing only to be indulged and caressed. Now this is all absurd ; reasoning *a priori*, we should say that to know the world, one must have intercourse with it, and facts show that a young girl always kept at home, is awkward and constrained in her manners, often selfish and unamiable in her disposition, and ignorant of the customs of society. Her mother may have moved in the most refined circles, be intimately acquainted with the forms and customs of polite intercourse ; she may have been faithful in imparting this knowledge, but mere rules in this case are of as little use, as it would be for a pupil to study the theory of drawing and music, without practice. Selfishness, pride and conceit are also fostered in the mind of one accustomed to feel herself the great centre of attraction, and to consider every one around her as subservient to her pleasure.

With respect to literary improvement, it may be thought that the quiet of domestic life is peculiarly favorable. We will suppose the mother herself to be entirely competent to instruct in all necessary branches of female education. Is it certain that she will have the requisite time for superintending her daughter's education, and conducting it on those systematic principles which will ensure a suitable attention to each department of knowledge ? The mother, however competent she may be to the task, however anxious to devote herself to her daughter's improvement, has many other claims upon her than those of maternal duty. As a wife she must share in the cares and anxieties of her husband ;—as the mistress of a family she must direct its internal concerns, and this alone might render it difficult for her to give that individual attention to literary subjects, which is necessary in an instructor. Society too has its claims ; and her time is always liable to be taken up with a friendly visit, a ceremonious call, or an appeal to charity : these interruptions break in upon the regularity of the prescribed systematic division of time, and the pupil feeling it very uncertain that her lesson will, if learned, be

heard, relaxes her diligence and acquires a habit of idleness and procrastination. We have said nothing of the claims that younger children may have upon the mother's care, or of various other indispensable duties ; but enough has been observed to show, how very difficult it must be for the most intelligent and energetic woman, charged with a variety of cares, to bestow that time and attention upon a daughter's education which is necessary for the successful cultivation of the youthful mind.

I have seen the attempt made by an energetic and judicious woman, whose pecuniary circumstances being somewhat embarrassed, and who, entertaining no very favorable opinion of public schools, resolved to educate her daughter. I had known this lady in her youth, and seen her the admiration and pride of society ; I did not see her again until her eldest daughter was about sixteen. How great was my astonishment, to behold in this daughter, an awkward, ignorant girl, with less polish of manners and less information than is ordinarily possessed by children of ten years of age. All who know anything of instructing, are aware of the time and patience which is requisite, even for teaching a child its letters : add to this, reading, spelling, writing, geography, grammar, arithmetic, and so on, to the higher branches of education, and it will not appear strange that the lady just mentioned with an extensive circle of acquaintance, and several younger children, should have failed in her attempt to educate her daughter. Seeing at length the impossibility of success answerable to her wishes, she placed her daughter abroad at a public school ; but the confirmed irregularity of her habits was unfavorable to improvement, and rendered irksome the systematic rules to which she was subjected. She felt, too, the need of those indulgences which home afforded, and which had greatly tended to render her intellect dull and torpid. From these circumstances, rather than any natural inferiority of mind, her improvement was not creditable either to herself, or to those under whose care she was placed.

But may not parents provide private teachers for their children, and thus keep them under their own observa-

tion? Doubtless this is more practicable where the expense can be afforded, than for parents themselves to give regular instruction. Young persons thus educated may, with a faithful instructor, make tolerable proficiency in literature; but there is great danger of their becoming selfish and haughty, when all around seem to live for them. Educated under the paternal roof, they can have little idea of a world in which their interests will clash with those of others, and where forbearance and self-denial will be continually needed. Parents may faithfully warn their children of these things; they may tell them that the world will present a scene very different from that in which their least complaint receives attention, and their slightest unhappiness meets with sympathy; but the habit of being served and indulged, becomes so strong, that when in after years the scene is reversed, and the petted child is called upon to sacrifice her own ease and comfort for that of others, she finds the task difficult and discouraging, and either shrinks from the performance of known duties, or becomes unhappy in the discharge of them.

We, see then, that however beautiful in theory it may be to educate girls at home, it is not easy in practice. The mother herself who sets out with the resolution to persevere in teaching her child, or in superintending her education, will at length feel that there are difficulties and evils growing out of her excessive anxiety; she will see that by close and constant contact with her child, and a habit of minute attention, she is prevented from seeing the outline of her character, and forming and executing those general rules to which subordinate ones should be subservient.

I have heard mothers who had been in the practice of instructing youth, say that they found more difficulty in governing and managing one or two of their own children, than they had done in controlling and instructing a large school. This may be easily accounted for; an instructor has, or ought to have, her mind free from other cares than those connected with her profession; if conscientious, she feels a sufficient degree of interest in the progress and character of her pupils to induce

her to make every possible exertion, but she does not suffer that excessive solicitude which often impedes the mother's progress. Physicians frequently profess an unwillingness to prescribe for their own families, on the ground that too great anxiety influences their judgment;—in all cases requiring the full exercise of the reasoning powers, it is important that the mind should, as little as possible, be influenced by the emotions.

Parents are often deceived in the characters of their children. We have at this place frequent opportunities of witnessing this. Sometimes one who brings to the Seminary a bold and conceited girl, (excuse me if the terms seem harsh) says, 'My daughter is excessively diffident, and needs to be brought forward and encouraged.' At another time, a child of dull intellect is committed to our care as a remarkable genius, who is capable of comprehending the most abstruse sciences. One who can scarcely raise the eight notes of the gamut is frequently considered as possessing great talents for music; another has learned to daub paper with water colors, and her parents wish that her fine taste in drawing may be cultivated, although the poor girl may not have sufficient correctness of eye to make a horizontal or perpendicular line. These mistakes are far from being confined to ignorant parents; parental blindness often falls upon those, who in other respects are wise and enlightened.

We have, in the preceding remarks, considered private education in its most favorable aspect, not taking into account the numerous cases in which the mother is inadequate to the task of instructing, from her own defective education, or from feebleness of constitution. Many young females being early deprived of a mother's care, the father may be compelled to send his daughters abroad for education. It seems, then, that there is a necessity for female schools; and yet, strange as the fact may appear, no provision for such an object has ever been made, by the guardians of the public welfare. Napoleon indeed established the school of St. Denis, for educating the daughters of his legion of honor; but this was con-

ducted on an imperfect plan, and very limited in its operation.

The founder of this institution was early impressed with the importance of female education. Her views on this subject are expressed in a small volume published about the year 1818, and called 'Plan of a Female Seminary, by Emma Willard.' The author sketched the plan of a Female Seminary, to be founded and endowed by public munificence. She urged the claims of the daughters of the republic, to share, in some small degree, with the sons, in those privileges for mental improvement which were so abundantly bestowed upon the latter. After pleading the justice of the claim and the expediency of granting it, as proved by a variety of important considerations, she thus remarks of female education in reference to national character and glory :—'Ages have rolled away ; barbarians have trodden the weaker sex beneath their feet ; tyrants have robbed us the of present light of heaven, and fain would take its future. Nations, calling themselves polite, have made us the fancied idols of a ridiculous worship, and we have repaid them with ruin for their folly. But where is that wise and heroic country, which has considered that our rights are sacred, though we cannot defend them? that, though a weaker, we are an essential part of the body politic, whose corruption or improvement must affect the whole? and which, having thus considered, has sought to give us by education, that rank in the scale of being, to which our importance entitles us. History shows not that country. It shows many, whose legislatures have sought to improve their various vegetable productions, and their breeds of useful brutes ; but none, whose public councils have made it an object of their deliberations, to improve the character of their women. Yet though history lifts not her finger to such an one, anticipation does. She points to a nation, which, having thrown off the shackles of authority and precedent, shrinks not from schemes of improvement, because other nations have never attempted them ; but which, in its pride of independence, would rather lead than follow, in the march of human improvement ; a nation, wise and

magnanimous to plan, enterprising to undertake, and rich in resources to execute.'

The late Governor Clinton entered warmly into the views of Mrs. Willard; he encouraged her to petition the legislature of New York, and in a message to that body, publicly expressed his own opinions with respect to the justice of the claim. The novelty of the petition caused considerable sensation, and gave rise to much discussion, both in the House and abroad. The more enlightened members seemed, generally, in favor of considering females as the legitimate children of the state, and making some provision for their intellectual improvement. There were those, however, who gravely asserted in the public council of the state, that 'learning was of little use to women, as it would tend to lead them from their own sphere of domestic duties, and thus prove injurious to the interests of society.' The bill for an endowment of a Female Seminary, after having received a favorable report from the committee, to whom it was referred, was defeated through the influence of those, who without attempting to deny the right which was claimed, thought it should be waived on the ground of the evils which might result, from enlightening the minds of those, who were destined to a limited and subordinate sphere.

It is upon a similar mode of reasoning that the slaveholding States found their objections to the instruction of those degraded beings, who are entailed upon them, a curse which they would gladly shake off. As respects the slave, this reasoning is undoubtedly correct; let the black population of the south be taught that they in fact possess the greater physical power; let their minds be opened to the truths of man's equality by nature, and of the unjust tenure by which they are kept in bondage; let them have the means of communicating with each other from distant places, thus enabling them to act in concert; let all this be done, and the fair regions of the south would soon present one universal scene of blood and carnage. While we deplore a necessity founded on the principle of self-defence, which holds in darkness so great a portion of human intellect, we cannot but admit

that such a necessity does, in the present state of things, exist.

But let the question come fairly before those who object to female improvement on grounds, which if not similar, are certainly analogous. Neither the *right* of holding slaves or keeping them in ignorance is now claimed; it is wholly a matter of *expediency*. The rights which the stronger sex possess of keeping the weaker in a state of intellectual bondage and darkness is no less questionable. Let it then be considered on the ground of expediency. What would be the state of society, if females were generally taught the laws of the material and mental world, the nature of right and obligation, their own duties, and their high responsibilities as moral and intellectual beings? Would such knowledge be likely to cause them to forsake the path of duty, and to seek a sphere of action, which, from knowing the constitution of society, and especially the nature of their own obligations, they perceive does not belong to them? There is an absurdity in such suppositions; and if a Mary Wolstoncraft, or a Frances Wright, have thrown aside that delicacy which is the crowning ornament of the female character, if they have urged the rights of their sex to share in public offices and in the command of armies;—if they have demanded that they shall be permitted to leave the sacred hearth, the domestic altar, and all the delights and duties of home, to mingle in political commotions or the din of arms, they have but expressed the overflowings of their own restless spirits, their own unnatural and depraved ambition. *They* are not to be considered as the deputed representatives of our sex; they have thrown off the female character, and deserve no longer to be recognized as women; they are monsters, a kind of *lusus naturæ*, who have amused the world to the great injury of that sex whom they have pretended to defend.

But let us look to such women as Hannah More, Maria Edgeworth, Mrs. Hemans; and, in our own country, many others equally distinguished in the walks of literature;—are such disorganizers of society, pedantic, unfeminine, neglectful of duty in their various domestic re-

tations? Are they not generally equally distinguished in private life for their amiable and domestic qualities, and for a faithful discharge of their relative duties, as in public for their high intellectual powers?

My dear pupils, may the whole tenor of your own lives be a constant refutation of the degrading assertion, that '*woman must be ignorant in order to be useful.*' On you the attention of many is fixed, and your future conduct, will be hereafter referred to as proving or disproving the problem, '*Is it for the good of society that women shall receive a liberal and enlarged course of education?*'

LECTURE V.

Public Schools.

It may be said, there is no difficulty in finding schools enough where young ladies can be placed for their education. True, there is no want of schools; but how miserably defective are many of them, as respects the qualifications of teachers and their facilities for giving instruction.

Somelady of fashion, after a few years spent in gaining superficial accomplishments, and a few more in showing herself off—by some means, perhaps an unfortunate marriage, the loss of friends and fortune, finds herself reduced to the necessity of gaining her own support. She opens a boarding-school, and parents, charmed with the elegant manners of one, whose exterior graces have alone been cultivated, entrust her with the care of instructing their daughters, not only in literature and science, but in morality and religion. But what can be expected of one, who knows nothing of a regular course of mental discipline, and who never felt the obligations of morality or the sanctions of religion? * We need not be surprised to see the

* Miss Edgeworth relates a story of an elegant and accomplished French opera dancer, who applied to a gentleman for a recom-

pupils of such instructors setting a high value upon external graces, and despising alike an unfashionable scrupulousness of conscience and the real elevation of a cultivated mind. They are thoroughly instructed in the art of *seeming* to be mild and gentle, and are taught to discourse with *seeming knowledge* of things of which they are ignorant. The same period of time, under different auspices would have sufficed to have given them the substance instead of the shadow; to have rendered the gem truly valuable, instead of imparting to it a fictitious lustre. Who that looks upon such a being with a sense of her high responsibilities, but must sigh to behold her devoting the few probationary years of life in the mere acquisition of personal accomplishments? Alas, they reflect not that the sweetest voice of music will be silent in the grave, the most graceful form that glides through the dance will moulder into dust; while the soul, with its treasures of knowledge and piety, will continue to exist through the boundless ages of eternity.

But I forbear to dwell upon a picture from which the reflecting mind recoils, that of a young female placed in the care of one who would mislead her, with respect to what is truly valuable in education, and the necessary preparation for future life. I would gladly believe such instances of misplaced confidence are rare, and that the greater number of those who engage in the business of education, are aware of their great responsibility, and anxious for the moral character of their pupils, as well as their perfection in personal accomplishments, and their progress in literary attainments.

And yet, with all the zeal, talents and virtue, which commendation to an English family as a governess. On observing that her request appeared to excite some surprise, she said, 'You surely do not doubt my capability—do I not speak French with the true Parisian accent? and as for music and dancing, I can certainly teach these to any young person.' The gentleman being thus pressed, was obliged to say that most mothers would be inquisitive about the moral character of the person to whom they entrusted their daughters. It is to be feared that such is the prevailing admiration for accomplishments in our country, especially in some of our cities, that a governess or teacher, possessing the qualifications of the opera singer, would find too many parents willing to waive the subject of morality.

any female teacher ever possessed, she cannot compensate her pupils for the want of facilities for improvement. Upon the former method of conducting schools, a single teacher often had the charge of forty or fifty pupils, assembled in one apartment, where writing, embroidery, rhetoric, philosophy, painting, arithmetic, chemistry and spelling, were all mingled together, in a chaotic confusion. The teacher, with no kind of apparatus for illustrations, no leisure for investigation, scarcely had time to hear a rapid recitation from memory of the lessons of each class, and this too while presiding in the school, called upon to make pens, to look over sums, to correct a drawing, or to point out the proper shades for the embroidery of a flower.* This, indeed, is a striking contrast with your present advantages. You smile at the picture, as if it were drawn to amuse you; but it is taken from reminiscences of my own school days, and the painful and vivid recollections of later years, in which, by sad experience, I learned to feel the trials of presiding over a school thus organized.

To a mind thirsting for the pure waters of knowledge, it is tantalizing in the extreme, to be condemned to see the fountain in the far off distance, to taste a few scanty drops, and yet never be allowed to gain a nearer access. You who are provided with facilities for attaining this fountain, should learn duly to appreciate and improve them. You can retire to your own rooms for study, and at all suitable times, have access to teachers, who, devoted to their particular departments of learning have the opportunity of preparing themselves for their duties. You have recitation rooms, where each particular branch of knowledge receives undivided attention. In chemistry, mineralogy and botany, the objects of investigation are presented to your senses. The very at-

* There are still many female schools in our country where similar scenes are presented, with the exception, perhaps, of embroidery, which is now generally laid aside, although other kinds of needle-work are often substituted for it. But parents should not be so unreasonable as to expect the improvement of their daughters under such disadvantages. It is true that they do sometimes learn; but at best, both teachers and pupils must proceed under great discouragements.

mosphere around you is redolent of literature ; not that which is exhaled from the muddy waters of abridgements and compendiums, but from the copious and unadulterated fountains of knowledge.

I trust, my dear pupils, that you are grateful for the higher standard of female education which now prevails, and for your own advantages. These you owe to the devoted zeal of your beloved Principal, and to the liberality of the city of Troy. The latter has done what the legislature of the state refused to do ; it has advanced funds for the purchase of the extensive grounds now appropriated to the use of the Seminary, and for the erection of the spacious and commodious building we now occupy.

With all the advantages which you enjoy, you are exposed to some dangers, from which, under the paternal roof, you might be shielded. I mean dangers arising from bad example, and the too prevalent influence of a false standard of merit. In a public school, where many young persons form a collective mass, there are dangers arising from their effects upon each other. ‘As a little leaven leaveneth the whole lump,’ so do pride, vanity, and disregard to moral and religious principles, spread from one and contaminate many.

Each of you are perhaps ready to exclaim, ‘Far be it from me to set an example that may injure the characters of any of my companions.’—I can readily believe that none of you would willingly become an agent of evil, a corrupter of others : none of you would say, ‘I consider fashionable dress and manners more respectable than virtuous principles ;’ but are there not some of you who, by your actions, lead others to suppose such is your opinion ? When a stranger arrives among you, what is the first inquiry of many ? ‘Is she handsome ? how is she dressed ? is she rich, fashionable and genteel ?’ Would it not naturally be inferred from this, that you considered these the most important qualifications ? How seldom do you hear the questions, ‘Is she pious, well informed or amiable ?’ Now there is always danger that young persons will acquire false ideas of what is truly estimable : especially do their standards of excellence depend much up-

on the opinions of those around them. All the good instruction given pupils by their teachers, may be counteracted by accidental associations. If you are told that virtue is more to be desired than beauty, and piety than elegant accomplishments, and yet you see the virtuous and pious neglected by certain young ladies, while external qualifications seem to give a right to a kind of exclusiveness and eminence—of how much greater influence may be this example than the precept!

Philosophers have not erred in considering the peculiar characters of individuals as greatly modified by accidental circumstances. The human mind is so constituted that what becomes common ceases to make an impression; the attention is not aroused by the recurrence of what is expected: thus, when you meet in this place, it is a thing of course for you to be reminded of your duty, and to hear moral reflections; many of you, perhaps, compose yourselves into a kind of lethargy, taking for granted that good things will be said, and that they will undoubtedly tend to your benefit, although you may neither listen to the counsel, or practise it. So in your recitation rooms, you expect explanations of grammar, rhetoric, mathematics, &c.; and your attention fails of being arrested. Let but the same moral remarks or illustrations, the same explanations be heard by you in some unexpected time or place, and your minds spontaneously open to receive the truths. Thus the Lectures to which you now listen with a respectful, though it may be in some cases with a vacant manner, may meet your eye, when far from the scenes with which you now are familiar; far from the friend who now addresses you, and whose voice may then be forever silent. How quickly then would your attention be aroused; how rapidly would recollection glance at one past scene after another, the various characters and events which since your school days had given coloring to your life; and how deeply you might regret that you had not listened to that admonition which bade you beware how you suffered your standard of virtue and merit to be unduly influenced by casual circumstances.

Let fashion direct the form of a hat, the cut of a sleeve, and we will even allow her an influence over manners

and deportment ; but let her not presume to enter the sacred precincts of virtue, to weigh against moral worth the gaudy plumage of which she boasts, or with her light wand to expel conscience, that stern and faithful monitor, from her guardianship over the heart.

You see, my dear girls, how important it is that your prepossessions should be on the side of virtue. Among the number with whom you here associate, you will not fail of finding some who entertain false ideas with respect to character ; and you will be in great danger of lowering your own standard of moral feeling, unless you learn to examine for yourselves, and to watch over your accidental associations of thought.

It is indeed of the utmost importance, that, in public institutions, a high moral standard should exist ; that the hearts of its pupils, not only on their own account, but for the sake of those who are associated with them should, as far as possible, be secured in behalf of correct principles. Especially is it necessary that a balance on the side of virtue should prevail ; this will produce harmony in the support of what is right and good :—pupils who enter such an institution, find the work of self-government and of virtuous training almost accomplished for them.

In families, we see, in general, prevailing characteristics. Some aim chiefly at holding a high rank in fashionable life ;—without seeming to possess much natural affection, and while in private very deficient in kind and disinterested offices among themselves, they endeavor, by various artifices, to set each other off before the world. This is wholly the result of selfishness : they wish their brother, sister, or cousin to appear genteel, because the reverse, they think, would disgrace themselves. It would be a fatal blow to be thought to have vulgar relations : of the moral character of those relations, they take little trouble ; for, as in the circle in which they are proud to move, morality is out of the question, so long as a fair outside appears, they make clean the externals, but within are full of strifes, envyings, and deceit. Sould we take a glance behind the curtain, and view the domestic life of a family where no moral or religious principle binds together those whose interests are constant-

ly clashing, and who need mutual self-denial and forbearance, what scenes would present themselves! Here the mask is thrown off, and each understanding the game which is going on, can feel no confidence that he or she in their turn is not to be deceived. Are there no females who are gentle as zephyrs before the world, and in private blustering as the north wind? are there not those who seem to have two faces, one decked in smiles and tender glances, the other distorted with evil passions? Suppose one of the other sex meets in the circles of fashion with an angelic creature, whose face seems the very image of moral virtue; her sweet accents and winning smiles sink into the heart, and he feels that she is the being to make glad his future path in life. With a trembling heart, he asks from her lips the sentence on which his earthly all depends: if he is rich, handsome and genteel, the votaries of fashion does not keep him long in suspense, for the great object of her artifices is to be consummated by such an union. Alas, poor youth, thy destiny in this world is indeed sealed! thou art like the fly caught in the spider's web; and too late wilt thou see thine own folly. For a little time the mask may still be worn, and if there are some lingering sentiments of moral beauty in the mind of the fashionable bride, she will perhaps intend always to *appear to be*, what she knows her husband thinks she is; but at the first opposition to her own will, the first call upon herself-denial and disinterestedness, the disguise is dropped, and the traces of beauty are no longer visible to the eye of the appalled husband!

You may feel that I am severe upon my own sex. The vices and deceptions of the other, it is not now my province to expose. It is probable, that in most cases, the cheat is mutual; and when the mask which concealed the character of one, drops off, the assumed disguise of the other is not long retained; and that both parties are left to gaze upon each other with mutual horror and disgust.

What a picture of human life is this! And, my dear girls, can you wonder that we, to whom the forming of your characters are committed, should so anxiously desire that you may indeed *be all that we would have you seem to be*? You are now young; your hearts are not yet so-

phisticated by the influence of a life of pleasure and dissipation. An occasional glance at such scenes must have shown you how strongly fortified your minds should be with the principles of religion and virtue, to enable you to resist their allurements. Here then, at this place, where the youthful mind is in a measure to be formed, and where it is to be fortified against the seductions of the world, how necessary it is that an elevated standard of moral character should prevail ! If even here, fashion can enthrall you with her fetters, restraining the spontaneous effusions of your youthful hearts, directing by her influence your affections and friendships, what will you become when your present restraints are removed, and the temptations of the world assail you ? Are any of you willing to believe or say, 'My chief ambition shall be to figure in the region of fashion ; the amiable qualities of the heart, the acquirements of intellect and the integrity of virtue shall have no charms for me ! The incense of my heart shall be offered at the shrine of wealth and pleasure !' Each of you would now feel insulted by having such sentiments ascribed to you ; and yet there is danger that the fascinations of the world, acting upon a cherished love of admiration and pleasure, may hurry you into the vortex of thoughtless dissipation, 'where virtue is forgot, and human follies reign.'

We wish you to pay such attention to dress and manners as may suit those stations in life to which you may be called ; at the same time we would endeavor to convince you that these are but the accompaniments, not the chief excellencies of a lady. The whole course of study recommended by the regulations of the institution with respect to your care of your rooms, occasional attention to domestic operations under the eye of the superintendent, all are designed to make you domestic, useful and good women. We would not that you should be like the butterfly, who, when on giddy wing she has sported away the short summer of youth and beauty, sinks into oblivion at the first approach of winter ; but like the evergreen, which seems brightest and most beautiful when the frosts prevail, may your old age exhibit the loveliness of virtue, and the beauty of that holiness which shall flourish in perennial verdure in the paradise of God.

LECTURE V.

Physical Education.

BEFORE proceeding to consider the subjects connected with intellectual improvement, I shall make some remarks upon the development of the senses, or those external organs, by whose means the soul communicates with material objects. Although these organs are the gift of nature, it is by practice or experience that they become truly useful to man.

The term physical education is used in reference to the improvements which can be effected in the human frame and the senses, by a proper system of discipline. Among the ancients, physical education occupied a large share of attention: it is now becoming a subject of inquiry among those who perceive the evils which have resulted to the body from a disproportioned cultivation of the intellectual powers. *Mind* is ultimately the object to be acted upon, in physical as in other branches of education. That department of the mind to which we are now to give our attention, is called by metaphysical writers, by the general term, *external states of mind*. These external states refer to the mind, as affected by external objects, as affecting the body, or as being affected by the body: they are also known by the general term *sensations*. With sensation, *perception* is intimately connected, the latter being the knowledge of the material world which the former communicates;—thus, you put your hand upon the stove, and you have the sensation of heat; by this you *perceive that the stove is hot*. The term *consciousness* is also superadded by some metaphysicians;—thus, you feel the heat; this is a *sensation*; you *perceive* the stove is hot, and you are *conscious or know* that you do thus feel and perceive. The term consciousness appears superfluous, for we cannot feel or perceive without knowing that we do so.

Music, drawing, and whatever is addressed to the eye and ear, are physical operations, inasmuch as they require the agency of the bodily organs in their execution,

or affect the mind through the agency of corporeal organs: but the *judgment* which decides upon the merits of these performances, and the *emotions* which they excite, together constituting the complex state of mind called *taste*, belong to the department of intellectual, rather than physical education.

Physical education commences almost with existence. The new-born infant shows itself capable of sensations; if a pin is carelessly placed in its dress, its plaintive cries at once denote that it is born with the power of suffering: it is the sense of touch which is now the organ of communication. This same sense appears almost as early to afford enjoyment: the infant, while gratifying another sense, that of taste, in imbibing the food which nature provides for its sustenance, seems no less delighted in clasping with instinctive fondness the soft, kind hand which sustains its feebleness. If it is disquieted, the gentle tones of its mother lull it to repose; when it awakes, its eye unconsciously wanders until resting upon the maternal smile, a new joy irradiates its countenance. This is the period which seems to distinguish the human being from the young of the brute species: no answering smile of love is ever seen among them; and although in the acuteness and perfection of their senses and in the rapid development of their physical powers, they usually surpass the infant, yet here the little immortal manifests the rational principle which is to endure forever.

It is with the infant, then, that physical education begins. Accustomed to constant rocking, or to being carried about in the arms, it forms a *habit* which requires indulgence. If it is early dosed with laudanum, elixirs, or ardent spirits, that it may be quieted or put to sleep, a habit is formed; this not only requires indulgence during infancy, but frequently lays the foundation for intemperance in after life. If the infant's head is suffered to recline usually on one particular side, the habit is formed of keeping the head in that position, and the face itself grows awry. A child may be fed with the most disagreeable nostrums, until a fondness is acquired for that which at first was disgusting to the taste.

You perceive how early *physical habits* may be formed. Nor are *mental habits* less early or less strong in their growth and development; we shall at present confine ourselves to the former. We have already observed that the term physical, as applied to education, has relation to the body. Not that the body itself, strictly speaking, can form any habits; this is nothing more than a collection of particles of matter, which have previously existed under the various forms of animal or vegetable substances, and which will again be separated to appear under new aspects, forming parts of organic or inorganic bodies. These material atoms are not subject to any of the laws which govern mind; but while united to the mind they are governed by it. The body is an instrument which the mind directs; and as in this state of existence they must dwell together, it becomes of great importance that they should mutually promote the welfare of each other.

The mind may at times sigh for deliverance from its burthensome companion; it may be conscious that but for this, it could range through the infinity of space, visit distant worlds, and exist in an atmosphere untainted by human follies: yet He, who made man, has thought proper to consecrate a union between matter and mind, so that in this life they compose but one individual.

Through the agency of the material particles to which it is united, the mind looks out of itself, and by sensations learns the properties of the material world. The senses are all dependent on material organs, though these organs are no more the subjects of sensation, than is an eye-glass of vision, or an ear-trumpet of hearing. The eye and the ear are themselves but as inlets, through which colors and sounds gain access to the mind.

To learn then the best methods of rendering the bodily organs subservient to the good of the mind, is physical education. The body may be considered either as a servant which the Creator of the mind has bestowed upon it, or as a travelling companion for the journey of life. As we would strive to teach a servant his duty, to render him familiar with the offices which he will be required to perform, so should the body be trained to such exercises

and duties, to such privations and efforts as the good of the mind may require. Whether, therefore, we regard the body as an instrument to be wielded by the mind, an humble companion, or a servant, the importance of attention to it, as closely connected with ourselves (for it is the mind which constitutes our identity) need not be urged.

The children of persons in the lower classes of society usually live wholly for the body. Play and labor, eating and sleeping make up the history of their early days. Or if they go to school and learn to read and write, their intellectual exercises are of so low a nature, as to leave the balance greatly in favor of the body. We sometimes see, even under such unfavorable circumstances, the workings of intellect, as if struggling to escape from the rubbish under which it lies ;—we see spirits endued with great power and force, burst opposing barriers and urge an onward course, mounting upwards like the eagle, impatient to gaze upon the fountains of intellectual light.

It is, however, rare for the children of very poor and debased parents to make such an escape from the chains in which mind is held by matter. The case of those who rise from obscurity and become intellectually great, does, in general, differ from this. Fortune often depresses parents whose aspiring minds never sink or become debased under any circumstances. Many a coarse and homely hearth sees gather around its evening fire, those who, after a day of toil, enjoy 'the feast of reason, and the flow of soul,' which cannot even be comprehended by many of the triflers who walk over Eastern carpets, and proudly recline on Grecian couches.

When looking at the sturdy child of poverty, whose ruddy face and sinewy form denote the full development of bodily powers, but whose dull and vacant eye, indicates the absence of thought, we feel, that the human being has not risen to the dignity of his nature. Destitute of moral elevation and intellectual culture, man is but little superior to the brute creation : it is only when all his faculties, physical, intellectual and moral are seen to act in harmonious concert, that he appears capable of enjoying or bestowing happiness.

A sound mind in a sound body (*'mens sana in corpore sano'*) was an ancient motto, denoting the most perfect state of man as a human being : but as the field of knowledge has been widening by new discoveries, the intellectual part of mankind have fallen into the error of neglecting bodily health in their zeal for mental improvement. As respects our own sex, both fashion, and increased attention to the mind, have been alike injurious in producing habits tending to physical derangement and debility.

We have remarked upon the early formation of physical habits, commencing even in infancy. The senses then learn their duties ; the touch corrects the errors of sight, and all reciprocally aid each other in informing the mind of the properties of matter.

The sensations are an important class of our mental faculties ; for you must remember, that hearing and seeing are no less states of the mind, than judging or loving. Education is employed upon mind alone. When the mother would teach her child to walk, she influences its *mind* to will the use of its limbs. She holds out an orange, and thus by exciting the desire of possessing it, she tempts the child to move. The will, obeying the impulse of desire and having power over the bodily organs, raises the feet, and impels the body towards the wished for object.

The senses need no foreign aid to bring them into use ; yet even with them, habit has great influence, as may be seen in those whose business leads them to the exercise of one sense more than another. The feelings of taste early mingle with our sensations : all children love music, and their future taste in this science depends much on their early associations. Pictures delight children, and according as those which are presented to them are well or ill executed, their taste with respect to them will probably be of a delicate or coarse nature.

All the motions of the body are subject to the influence of habit. Stooping while walking and sitting may become a habit, and it is equally easy to make an upright posture become such. Walking with the toes turn-

ed in, is a common habit, whereas the more graceful mode of turning them out, and thereby enlarging the base of support and rendering motion or rest easier, might with equal facility be acquired.

It is however too late to warn most of you of the importance of childhood with respect to physical habits; you have all contracted those of some kind or other, either good or bad. But it should excite our gratitude to the former of our bodies and the author of our minds, that strong as the power of habit may be, the mind still possesses a controlling power to alter and to correct what we see amiss either in our physical, intellectual or moral habits.

In common with many others who have taken a share in the education of the young, we feel that physical education has been too much neglected. In the mental efforts which the teachers, as well as pupils of this institution have been obliged to make, in order to attain the desired standard of intellectual improvement, much has been suffered, through a neglect of exercise.

When the mind is deeply interested in literary and scientific pursuits, it is prone to forget the body; this, by being suffered to remain long inactive, becomes reluctant to move, and visits back such neglect, by headaches, languors, sleeplessness, indigestion, and a thousand other ills tending to paralyze the mental energies. Aware as we all are of this danger, connected with the pursuits of knowledge, it is to be hoped we may profit by past experience, and retrieve as far as possible, by a systematic course of exercise, the health which has been sacrificed.

Calisthenics,* or female gymnastics, is very properly becoming a branch of education. I have, however, seen with regret, that many of you appear to engage in these exercises with reluctance, as if every moment taken from your studies were time lost. With the view already given of the intimate connection

* From two Greek words signifying grace and strength. A small work on Calisthenics, recently published by Messrs. Huntington, Hartford, would be found useful in female seminaries.

between the mind and body, you must be convinced that the latter cannot with impunity be neglected. And yet even our pleasant morning walks seem by some to be counted an unnecessary and tedious task, and youthful limbs are sometimes seen dragged heavily along, as if already touched by age and infirmity. An early walk in a fine summer morning to our classic Mount Ida,* will not only afford a needful physical exercise, but presenting you with a lovely picture of the combined beauties of nature and art, tend to raise in your minds cheerful images, and to lead your thoughts to the Author of all good.

Those of you who have become interested in the different branches of natural science, particularly Botany and Geology, have found a new interest in the works of nature, and new motives now lead you to ramble over its wild and sequestered scenes.

As a branch of physical education, dancing is recommended by physicians; when practised merely as a school exercise, it seems not liable to the objections which many urge against promiscuous dancing assemblies.

Connected with physical education are music, drawing and writing, and indeed every pursuit depending upon bodily action: these will be considered under the head of accomplishments.

Riding on horseback is a very healthful as well as graceful exercise; yet it is somewhat questionable whether there is not too much the appearance of display in a young lady's prancing through the most public streets of a large city. A rural excursion on horseback is more safe and proper.

Before dismissing the subject of physical education, I would remark, that, influenced by the suggestions of the Principal in her late letters from Paris, and by my own anxiety that you may have greater facilities for exercise in the open air, I have petitioned and obtained from the Corporation of Troy a considerable addition to the semi-

* A hill on the east which overlooks the modern Troy: here, instead of the din of arms or the stratagems of war, is presented the picture of a young and flourishing city, where commerce and the arts, literature and science, all find a genial atmosphere.

nary grounds. This acquisition will afford us the means of cultivating flowers, so that we may expect soon to see Flora take her station with the muses.

The cultivation of flowers, and indeed everything connected with gardening, has a most happy influence upon the disposition as well as the health. I scarcely know of an instance of a lady being at the same time ill-tempered and fond of cultivating flowers. I have known those to whom sorrow had become familiar find in flowers a solace for a wounded heart. To the cheerful they suggest images of hope and happiness, and to the disturbed mind they seem to have a power of imparting serenity. It is not after having walked among those eloquent witnesses of the power and benevolence of God, and inhaled the morning air from their dewy petals, that a woman would be likely to be heard using ungentle expressions towards her husband, her children, or domestics. It is when foiled in ambition to outshine others in the circles of fashion, when languid from dissipation, or disgusted with a round of empty amusements, that a peevish and irritable temper may be expected.

Beauty is essentially connected with health : *exercise, neatness* and temperance are essential to both. It is much to be lamented that young girls are so frequently imprudent with respect to the care of health. I have spoken of exercise, but something more is necessary—it should be taken at proper hours, and in a suitable dress. An early morning's walk in a pair of thin prunellas will be more injurious than even the want of exercise. Unless the feet are warm and dry the body cannot be in a state of health and comfort. The good old custom of former times, with respect to the knitting and wearing woollen has given place to idleness, and cotton and silk hose. These materials are too light for our northern winters. A young lady who, induced by the vanity of displaying a delicate foot, appears abroad in cold or damp weather with a stocking and shoe fit only for walking over a drawing room carpet, may succeed in attracting admiration ; but she will not fail of receiving severe censure for her imprudence. What man of sense

would wish to marry a female who had no prudence with regard to her health? Would the fortune or honor of her husband be likely to be more dear to her than her own health and life? I am sensible that imprudence of this kind is often the result of thoughtlessness rather than vanity; young persons are not sufficiently aware of the danger of such exposures, and, having experienced little sickness, they forget the frailty of their natures, and what slight causes may give rise to fatal diseases. But having been warned by their friends, and their own sad experience, they are inexcusable if they continue the practice of carelessness involving consequences so serious.

Intimately connected with the care of health are the modes of carrying the body in writing, sitting at the piano, walking, &c. I shall here offer the remarks of a physician,* respecting the structure of that part of the human form which becomes bent and distorted by the contraction of certain injurious and bad habits.

‘The weight of the principal part of the body or trunk, the weight of the neck, the head and the two upper extremities, are supported by a single bony column, called the spine. This column is about three inches in diameter. It consists of twenty-four pieces of bone placed one on the other; and between each two is interposed a substance, somewhat resembling caoutchouc, or India-rubber, for the purpose of giving it elasticity. This column is hollow, and contains the spinal marrow. Now the spinal marrow is the origin and source of the nerves, that convey the influence necessary to voluntary motion; and they are sent off in pairs to the various muscles. The bony pieces of the spine are confined together by many small ligaments, by the elastic substance just spoken of, and by numerous muscles, affixed, not only to connect and support, but also to move them.

‘The bones of the spine, at an early period of life, are

* See Dr. Warren’s lecture on Physical Education before the American Institute of Instruction.

themselves in part composed of an elastic, cartilaginous or gristly substance; and are always of a porous and sponge like texture. In consequence of this kind of organization, the spinal column possesses much elasticity and flexibility, which enable it to yield and to move in different directions, and expose it to receive permanent flexures, when there is a deficiency of natural strength in its composing parts.

‘Causes which affect the health, and produce general weakness, operate powerfully on this part, in consequence of the complexity of its structure, and the great burden it supports. When weakened, it gradually yields under its weight, becomes bent and distorted, losing its natural curves, and acquiring others, in such directions as the operation of external causes tend to give to it; and these curves will be proportioned, in their permanence, to the producing causes. If the supporting part is removed from its true position, the parts supported necessarily follow, and thus a distortion of the spine effects a distortion of the trunk of the body.

‘The change commonly begins at the part which supports the right arm. The column bends towards the right shoulder, forms a convexity on the side where the shoulder rests, and thus elevates the right higher than the other. This elevation, or, as it is commonly called, growing out of the shoulder, is the first phenomenon that strikes the friends of the patient. Often when observed, it has already undergone a considerable change of position, and the change is not confined to the shoulder, nor to the portion of spine immediately connected with it. On examination, it will be discovered that the curvature to the right in the upper part of the column, is accompanied, as a natural consequence, by a bend of the lower part of the left, and a corresponding projection of the left hip. It is perfectly obvious, that the inclination of the upper part of a flexible stick to one side, will leave the lower part on the others; and when, by this inclination, the vertical support is lost, a disposition to yield at the curving points will continually increase, until it be counteracted by some other power. Thus it happens, then, that any considerable projection

of the right shoulder will be attended by a corresponding projection of the left hip.

'The rising of the shoulder involves other changes in the osseous* fabric. For as the spinal bones support the ribs, when these bones project they necessarily push forward the ribs dependent on them. These ribs form the frame of the chest, and of course the right side of the chest is projected forwards, and causes a deformity in the fore part of the body. Nor do the changes stop here. The posterior ends of the ribs being pushed forwards, and the anterior ends being confined to the sternum, or breast bone, the right edge of the sternum will be drawn forwards, and the left edge consequently turned backwards. The fore parts of the left ribs will be gradually forced inwards or backwards, and thus the left side of the chest distorted and contracted. I feel warranted in the assertion, that of the well educated females within my sphere of experience, about one half are affected with some degree of distortion of the spine.'

The physician from whom I have borrowed this simple and unaffected description of a part of the human anatomy, proceeds to consider the causes of the distortion and derangement of its various parts. He notices the want of exercise, and the taking of food, improper in quantity or quality. On the latter head I should have spoken, but want of time obliges me to omit this, as well as many other subjects of important interest, connected with physical education.

'The habit of bending the neck, while writing or drawing, gradually compresses the vertebræ, and the intervertebral substance on their anterior part, and causes a permanent change in the form of this part of the spinal column. This distortion is so very common among us, that we are apt to consider it a natural formation. In fact, however, it is entirely artificial in a great number of instances. Sometimes it is the consequence of negligence, and not unfrequently of timidity. Whether it tends to impair the health, always, I will not

* Bony, from *os*, a bone.

say; that it sometimes does, I am certain, and its effect in deforming the shape is even greater than a moderate degree of lateral curve.

'The immediate cause of the lateral curve of the spine to the right, opposite to the right shoulder, is the elevation and action of the right arm in drawing and writing. This posture pulls the part of the spinal column to which the muscles of the right arm are fixed, to the right side. The convexity of the spine thus produced, keeps the right shoulder elevated, and the left consequently depressed. The lower part of the column is thrown to the left side, and this displacement being favored by the disposition to rest on the left foot while standing to speak or read, there comes to be a permanent projection of the left hip. The postures employed in practising on musical instruments sometimes bring on these disorders; as, for example, a great use of the harp favors the disposition to lateral curvature, from the constant extension of the right arm.'*

The mode of sitting at the piano ought to be carefully regarded; if you comprehend the explanations with respect to the construction of the spine, or back bone, you will perceive how important it is that it should be held erect, and that by indulging yourselves in a crooked posture, the figure will at length grow distorted. You know that if you should keep a straight young twig confined in a bent position for a length of time, it would become a crooked tree. We should think it a strange taste in a gardener who should thus wish to pervert the beautiful and perfect works of God. A crooked tree might indeed bear good fruit, and if any of you are by nature distorted in body, you must endeavor to supply the defect by richness of mental culture.

In France, great pains are taken with children to give them the habit of holding back the shoulders and expanding the chest; and it is said that the collar bone is longer in French women than in others. The posture in bed should not be habitually such as to cause a crooked position of the spine. High pillows are inju-

* Dr. Warren.

rious, as they produce the same effect upon the form as stooping.

With respect to walking, the carriage of the body must depend greatly on the perfect state of the spine; the custom of holding the head up, the shoulders back and throwing the chest forward. You may all do much to improve yourselves in these respects by walking in your rooms with a book upon your head. In order to balance the book you must necessarily hold your persons erect, and instead of looking down, as young ladies are very apt to do, direct your eyes horizontally. 'How different,' says the physician already quoted, 'are the impressions made on us by a man whose attitude is erect and commanding, and by one who walks with his face directed to the earth, as if fearful of encountering the glances of those he meets! Such attentions are even of greater importance to the fair sex, where we naturally look for attraction in some form or shape. If nature has not given beauty to all, she has given the power of acquiring a graceful movement and an upright form, qualities more valuable and more durable than the other.'

One more subject connected with physical education is the habit of tight lacing. In enabling you to comprehend the manner in which this practice becomes injurious to health and destruction of life, we again refer to Dr. Warren's lecture.

'Nature has so contrived the human chest, that there is no superfluous play of the parts composing it. Its movements are just sufficient to give such an expansion to the lungs and such an extent of oxygenation of the blood, as are adequate to the wants of the individual under different occurrences. In females the chest is shorter than in males; and to compensate for this, the motion of the ribs is more extensive, and more frequent. Whatever limits this motion, is peculiarly injurious to the sex, especially as they are more disposed to consumption and other chronic affections of the lungs. Now the ligatures in the fashionable dress are placed precisely on that part, where the motion should be the greatest; that is, the lower part. It is precisely here,

that in case of fracture of the ribs when we desired to stop the movements of the chest, we apply a tight bandage, though rarely do we venture to make it so tight as the ordinary corsets. The effect of such pressure, begun at an early period of life, will be understood from what has been stated in regard to the spine. The bones must yield to it; their shape becomes permanently altered; the lower part of the breast contracted, the space destined by nature for the heart and lungs diminished, and what the fatal results of all this on these tender and vital organs are, every day's experience shows us. The influence on the health, though slow, is certain. It may not at once produce consumption; but it lays the foundation for ills it would pain you to hear and me to describe. I will only say, by way of specification, that among other diseases, of which this is the fruitful germ, I have known three instances of perpetual headache, at last bringing on insanity, and terminating in death. The immediate cause of the disease was the compression of the heart and great blood vessels, and the consequent accumulation of blood in the head.'

You cannot fail to comprehend this simple explanation of that part of your own frames which you too frequently expose to derangements, from the foolish ambition of appearing slender and sylph-like. But although the circumference of the waist may be diminished, the appearance of the whole person so far from being improved, is much injured by tight lacing. A rush of blood to the head gives the face a purple and unnatural flush; the muscles which give play to the arms and shoulders being confined, the motions appear stiff and ungraceful, the breathing is obstructed, and the whole body rendered uncomfortable. In such a situation who can converse with ease and confidence, and delight the social circle by a fine flow of thoughts, and beautiful mode of expression? The mind, partaking in the sufferings of the body, becomes torpid, and instead of giving and receiving enjoyment, in the hours devoted to society, torture on the part of the victim and pity for her manifest sufferings are experienced.

Corsets, when properly worn, are far from meriting the general condemnation which they have received. They

may be so made as to prove a support to the body instead of an injury. A busk not too wide or too rigid seems to correspond to the supporting spine, and assist rather than impede the efforts of nature to keep the body erect.

A degree of tightness, not uncomfortable or impeding any of the functions of respiration, is probably conducive to health. It prevents that weakness of the stomach of which many females, especially those who do not wear corsets, frequently complain. A moderate compression of the chest is thought also by physicians to check a tendency to dropsy. Indeed it is with corsets, as many other things, that it is the abuse rather than the use of them which is to be condemned.

In concluding my remarks on physical education, I would recommend to you a practice suggested by a French writer,* viz. that of keeping a kind of physical journal, or a record of your observations upon your own peculiar constitutions. In order to make these observations, it will be necessary to pay particular attention to the degree and kinds of exercise most conducive to your health, the quantity and kinds of food most salutary, as well as the best seasons for taking particular kinds of food. Thus some persons find that breakfasting upon meat makes them dull and heavy, while the constitutions of others requires more of solid food. Late suppers are probably found by all to be injurious. By attention to physical changes, and an observation of those simple remedies which are found efficacious in relieving slight complaints, females may learn to preserve and regulate their own healths without the aid of a physician, except in cases of sudden and acute diseases. A knowledge of Chemistry and Botany will prove of great use to you, with respect to an acquaintance with medicine. Every woman ought to understand the elements and composition of the remedies prescribed for her, or by her administered to others. Without a knowledge of Chemistry, she cannot be made to comprehend this, but with it, she holds a

* M. Jullien.

key that will unlock the mysteries with which ignorant physicians have sought to envelope the healing art.

If you ask a physician the component parts of a medicine which he orders, and he is unable to answer, you have reason to doubt his qualifications for his profession. Scientific practitioners do not fail to investigate the chemical elements of the substances they use, and it is by a knowledge of these elements, and of their modes of combination, aided by experience, that they can calculate on the effects to be produced. A knowledge of Botany will enable you to ascertain with certainty the identity of plants which are important as medicinal agents: the common names of plants, being traditional and local, it is impossible to decide on them with certainty; but Botany will furnish you with a sure and unerring guide to their true name, as recognized by physicians.

In the department of your journal devoted to physical changes, it would be well to keep a record of medicines whose effects you had witnessed on yourselves or others, with their composition and nature; if vegetable remedies, give their botanical names and characters. Females have much need of some medical knowledge, both with reference to their individual maladies and the diseases of those around them; and although accustomed, as most of you have been, to be watched over and administered unto, you can now have little conception of the changes which will take place; yet the time may soon arrive when it will become your turn to watch over, and minister to others.

According to the arrangement which we have made of the departments of education, we shall next proceed to consider *intellectual improvement*.

This will demand much attention, as it involves the subject of mental discipline, and the consideration of the various branches of study in which you are now engaged. Even the study of moral philosophy, considered as a science, properly comes under the head of intellectual improvement, though as an art, or in its practical application, it properly belongs to the ethical or moral department.

Our attention will now be devoted to the consideration of those means by which the slumbering energies of mind may be aroused, and those energies strengthened and developed.

In remarking upon the different branches of study, it will be my object, 1st, to give general views of the history and progress of each science; 2d, its prominent principles and its relations to other sciences; 3d, its objects and practical applications. I may depart from this method in some cases, as where it seems most proper to consider first the principles of a science, or where it appears unnecessary to treat of the history of a science distinctly from its outlines.

LECTURE VI.

Division of Mental Faculties.—Mental Discipline.— Cultivation of Mental Faculties.

THE mind is the object on which education operates. Even those habits which seem to depend wholly upon the body, we see have their origin in the mind, without whose vivifying influence the human machine would be as inactive as the marble statue, or the body from whence the soul has departed. Physical education has relation to the mind, as governing the body, and capable of making it the willing and ready instrument of a variety of sensations and muscular movements. Physical education also includes that care of the body which is due to it as the tenement of the soul, and on whose sound condition the welfare of the latter so much depends.

Before proceeding with our remarks on intellectual improvement, it may be proper to give the outlines of a classification of *the states of mind* which has of late been received with great approbation both in Europe and Ame-

rica ; I mean that of Dr. Brown, to which allusion has already been made. According to this, all our mental phenomena may be referred to three great classes, first, *External states of mind* ; these include all our sensations, as derived from *smell, taste, touch* and *sight*, and also all the feelings which arise from the action of the muscles ; or which are raised in the mind from external objects, or from changes of the body, which is external with respect to the mind. Second, *Intellectual states of mind* ; these include what some writers have called the *reasoning powers*, the powers of the *understanding*, *intellectual powers*, &c. Third, *Emotions* ; these include what have been termed *active powers* ; but Dr. Brown very properly asserts, that the mind when in that state called *hope*, or *joy*, is no more active than when engaged in *reasoning*, or *imagining* ; a classification must, therefore, be defective which makes a property common to both classes the foundation of a distinction.

The intellectual states of mind and the emotions unitedly form a more general division, called *internal states*, in contra-distinction to *external*. These internal states are such as the mind could experience, were it separated from the body. If we could imagine a living human being with the entire loss of all his bodily senses,* although he would be cut off from all external objects, yet we can conceive that he might *remember* the past, he might *grieve* for his melancholy fate, and might *hope* for death to set his spirit free from its living and breathing tomb. It is this capacity of the mind to 'enter into its own sanctuary and to commune with itself,' which, as Dr. Brown remarks, renders it 'truly immortal' and independent of the perishable atoms to which it is now united.

Fearing that I may not have done justice to Dr. Brown's

* This supposition is not as absurd as may at first be imagined. Aged persons sometimes gradually lose their sight, hearing, taste, and smell ; and yet they are no less living beings than before the loss of their senses. We cannot suppose that the only remaining sense, that of touch, is the link between life and death. Instances too have occurred, in which persons have been under the influence of a general paralysis ; that is, they have been wholly incapable of muscular motion, and almost insensible to touch, and this without being rendered incapable of thinking or reasoning.

classification, I will repeat it in his own words. 'We have *sensations*, or *perceptions* of objects that affect our bodily organs; these, I term the *sensitive* or *external affections* of the mind; we *remember* objects, we *imagine* them in new situations, we *compare* their relations; these mere conceptions, or notions of objects and their qualities, as elements of our general knowledge, are what I have termed *the intellectual states of mind*; we are moved with certain *lively feelings*, on the consideration of what we thus perceive, remember, imagine, or compare, with feelings for example, of *beauty* or *sublimity* or *astonishment*, or *love*, or *hatred*, or *hope*, or *fear*; these and various other vivid feelings analagous to them, are our *emotions*. There is no portion of our consciousness which does not appear to me to be included in one or other of these three divisions. To know all our *sensitive states*, all our *intellectual states*, and all our *emotions*, is to know all the states or phenomena of the mind.'

In treating upon physical education, we have considered the mind in relation to its external affections. We shall now proceed to consider our second division of the departments of education—intellectual improvement; this will comprehend Dr. Brown's second division, or the intellectual powers.

In entering upon the subject of intellectual improvement, a vast field opens before us; it will be impossible to do more than to take a rapid and cursory view of the many important subjects which present themselves. We shall consider in what manner the mental powers should be disciplined in order that they may strengthen and develope themselves, and then proceed to notice the various branches of literature and science which are the subjects of your present studies.

We have seen under the head of physical education, how much depends on habit, and it was remarked that intellectual habits are as early formed and of as permanent a nature as those which relate to the body. Mr. Locke observes, 'We are born with faculties and powers, capable of almost anything; but it is only the *exercise* of those powers which gives us ability and skill in anything, and leads us towards perfection. As it is in the body, so it

is in the mind ; practice makes it what it is, and most even of those excellences which are looked on as *natural endowments*, will be found, when examined into more narrowly, *to be the product of exercise*, and to be raised to that pitch only by repeated actions.' Many of you can bear witness to the truth of Mr. Locke's assertion, respecting the power of habit. You will recollect the difficulty you at first found in investigating the subjects you were required to study. Accustomed as many of you had been to a mechanical parrot-like mode of recitation, where the memory and not the understanding was taxed, you felt that it would be impossible to study and recite as your classmates did. You heard them give long analyses of works on rhetoric, history, or philosophy, explaining in their own words with clearness and facility the ideas of their authors ; and you believed yourself wholly incompetent to the attainment of such powers. You heard with astonishment those of your own age demonstrating with clearness and force some of the most difficult mathematical propositions, and you gave them credit for faculties of a higher order than you possessed. You now look back on those feelings with mingled emotions of shame and pride ; of shame that you should thus have undervalued your own talents, and pride that you have overcome obstacles and acquired a habit of patient investigation. This habit is of infinitely more importance than all other intellectual attainments. Were a person accustomed to reasoning, reflecting, comparing and judging, to be required to give up those mental habits, or the knowledge gained by their means, he would not hesitate to part with acquisitions already made, rather than to lose the instruments by which they had been gained. Persons who have gained wealth can lay aside those habits of business by which it had been amassed, feeling assured that they shall be able to meet their future wants ; but the treasures of knowledge, although rich, may not thus answer for future occasions ;—in the ever varying, ever changing scenes of life, we are continually placed in new situations, where we need to make new comparisons, and act on new principles : thus we require the instruments of mental labor to be ever bright and ready for use.

In the view we are now taking of education considered in reference to the nature of the mind, it may be well to note those mental faculties which it is the object of *intellectual improvement* to cultivate and develope. I shall not, as we proceed, confine myself to that peculiar view of the mind which the author whose general divisions I have adopted has given, but shall use the terms *reason, judgment, memory, &c.* according to their general acceptations, viz., as distinct powers: they may be considered as *genera*, belonging to the class *intellectual* powers. I shall use this arrangement for the sake of convenience, although the minuter analysis of Dr. Brown very justly reduces the many supposed intellectual powers under the two generic terms, *simple* and *relative* suggestion, the former including conception, memory, imagination and habit; the latter reason, judgment, abstraction, the power of generalizing, &c.

We may now consider the human mind as a garden laid out before us: he who created this garden, planted in it the seeds of various faculties; these do indeed spring up of themselves, but without education, they will be stunted in their growth, choked with weeds, and never attain that strength and elevation of which they are susceptible. In one part of our garden the germ of reason is seen to unfold itself, in another appears that of memory, in another that of judgment, until all the faculties of the intellect are in their full progress of development. The emotions and passions are mingled with powers of slower growth: while the intellectual gardener cultivates the latter with assiduous care, he knows that the passions need his most vigilant attention; that if they grow rank and unpruned, like the fatal Bohan Upas, they will poison and destroy the vital principle of virtue, and root out the moral harmony on which the beauty of the whole depends. Leaving the passions and emotions to be hereafter considered, our concern now is with those mental germs which belong to the intellectual department. The skilful gardener knows that his roses require one mode of culture, his tulips another, and his geraniums another; and that attention to one of these, will not bring forward the other. So ought the mental cultivator to understand

that the germs of the various faculties should be simultaneously brought forward. This truth seemed not to have been understood by those, who, bending all their efforts towards the cultivation of the memory, neglected the other powers of the mind.

To show you more plainly what is meant by these remarks, I will state a very common fact with respect to pupils whose memory has been cultivated at the expense of their other faculties. Many such have entered this institution, flushed with the hope of standing highest in their classes, as they had done where only *memoriter* recitations were required. Confident of knowing 'every word of her lesson,' such a pupil has entered her class expecting that all would admire the fluency with which she should 'say it off.' Her teacher, instead of suggesting the mere words of the lesson, perhaps demands the nature of the subject she has been studying: this unexpected question confuses her; for the truth is, she has never investigated it at all; she had not learned that words are nothing, except as they are the medium of communicating ideas; she had always taken the shadow for the substance, and is now astonished that she had never before thought it necessary to understand what she learned.

The mental habit of exclusively connecting words by the mere relation of contiguity, is very injurious to the mind: when a pupil becomes aware of the unprofitableness of the exercise, it is often difficult to call forth the reasoning powers, which have hitherto lain dormant. On the other hand, that exercise of memory which depends on contiguity or juxta-position, should not be neglected. In the acquisition of certain sciences, and in certain departments of literature, it is important that some things should be learned by rote; as in languages, the declensions and conjugations of words; and in arithmetic the numeration and other tables; portions of scripture and hymns also should be taught to children, even though they are above their comprehension, for in after life they may be remembered with deep interest and satisfaction. As the other powers develope, the faculty of remembering words in a certain

order is weakened ; thus it is that persons accustomed to deep thinking, find it almost impossible to learn anything by rote ; this is because their powers of reasoning and judging have been much more exercised than their memory. Those who acquire habits of committing words to memory, often acquire a wonderful facility in this respect ; as actors, who learn long parts in a play in a very short time ; and some orators and preachers, who are said to commit to memory the whole of their discourses before they appear in public.

We should not however expect that a mind, fertile in suggestions of analogy, glancing quick from cause to effect, and from secondary to primary causes, would possess this kind of local memory in a great degree. Of some persons distinguished for the greatness of their conceptions, and richness of their acquirements, it has been found that even their own productions, have in progress of time been forgotten by them ;—others when writing upon a subject they had before treated of, seem to forget what they had before written ; their thoughts taking a new turn, their language and arrangements are found to be essentially different. It is not my present intention to give a dissertation on the mind, any farther than to show that its nature must be studied by those who would succeed in its cultivation, and that it is important for you, as pupils, to learn as much as possible of your own mental constitutions. Besides the general laws, which are common to all minds, each has its constitutional differences, and its peculiar habits. Where you find your mind most weak by nature, you should strive most to strengthen it by suitable exercises. Where you find your intellectual habits defective, you must endeavor to change and improve them. For those who have been little accustomed to the exercise of the reasoning powers, it is well to enter upon a course of mathematical studies. Locke says, ‘ I consider mathematics as a way to settle in the mind a habit of reasoning closely and in a train ; not that I think it necessary that all should be deep mathematicians, but that having got the way of reasoning which that study brings the mind to, they might be able to transfer it to other parts of knowledge as they have occasion.’

The same writer observes in another part of his 'Essay on the Human Understanding,' that an acquaintance with even the first book of Euclid's Elements of Geometry is of great use to the mind, as unfolding a beautiful and systematic method of reasoning.

I shall close this Lecture, by giving a few rules, to assist you in the attempt to improve and discipline your own mental powers.

First, *Study the nature of your own minds.*

In order to assist you in this, compare yourselves with others. Observe their recitations, the particulars in which they excel or are deficient. Notice whether they find the same difficulties that you do. It is also a very useful exercise for two or more pupils of nearly equal abilities, to write upon some one given subject, and then compare their ideas and manner of treating the same subject. While you should be careful not to set your mark too low, and thus fail of what you might attain; it is also important that you do not tax yourselves too heavily and thus injure the mind by overstraining its powers.

Second, *Never consider a lesson learned until you can give the author's ideas in your own words, or at least till you can point out the prominent parts of which it consists.*

This method of studying is the reverse of learning by rote; it is acquired by practice, and is the only proper way of attempting to gain knowledge. It is impossible, after having read several pages of a work, to remember every idea which an author has advanced; you should therefore strive to comprehend the main scope of his argument, and not dwell upon the less important ideas. Many pupils, from attempting to remember everything, fail in attaining a clear knowledge of anything. This habit of discriminating the more from the less important ideas in reading and studying, will be of great utility in after life. A facility is thus gained of collecting, almost at a glance, the subject of a whole page.

It is by following the rule above given, that some of your fellow students have been able to give an analysis of the unabridged volumes of Brown's Philosophy of the mind. They could never have accomplished

so Herculean a task, but that they first learned the leading argument of each page, then of each lecture, and then of the principal departments of the work; and thus were able, in a few months,* to give with clearness the general arrangement of the whole work, with the minor divisions, and the principal ideas under each.

Third,—Accustom yourselves to *express your ideas on the various subjects of study, in writing.*

The practice of writing an analysis, or making a sketch of the lessons you are studying, is a very good one; but this cannot be done until you have prepared yourself for it by previous study. By attempting to make an outline before a view of the whole has been taken, the mind is confused rather than assisted. It is well to make the sciences you study the subjects of your weekly compositions, sometimes taking them in one point of view, sometimes in another.

Fourth,—*Improve the best hours of the day to secure those lessons which require the greatest mental effort.*

The season most favorable for study is with most persons, the morning; the body being then refreshed by sleep, and the mind by a suspension of effort; your most difficult lessons, as mathematics, or philosophy, should be studied. Drawing, music, botany, chemistry, and other pursuits which are not of an abstract nature, can excite an interest even when the mind is fatigued. But when the mind appears in any degree overstrained, it should be suffered to relax, until it spontaneously recovers its tone. It is evident that in all intellectual as well as mechanical labors, the *work accomplished* must be in proportion to the *power* exerted. When the mind is languid it is impossible for it to put forth power, time cannot make up for mental energy. One hour of successful effort is worth more than days of weak attempts. In order to keep the mind active, regularity must be observed in exercise, diet, and sleep: they gain nothing who disregard the body in their zeal for mental improve-

* This study is generally pursued in the institution in connexion with some other branches.

ment ; if disordered or enfeebled, it will certainly react upon the mind.

Fifth,—*Endeavor to fix your attention exclusively upon the study in which you are engaged.*

Attention is indeed every thing ; without it nothing requiring mental effort can be well done. In bodily operations we may acquire so great a facility of execution that we have no need of attention : thus a musician can perform a familiar air without thinking of his notes. Some feminine employments, as sewing or knitting, operations which at first seemed complicated, in time become so familiar as to require no attention ; the hands seem instinctively to perform the accustomed movements : but mental exercises demand attention.

It is perhaps the most difficult task of young students to gain that command of their trains of thought which scientific research requires. How many are diverted from the subject upon which they engage, by the most trifling circumstances ; even the appearance of a fly upon a window, an object in the street, or a slight noise in an adjoining apartment, are each sufficient to call off their attention. And if even no pretence should offer, the mind wearied with the unusual attempt at investigation, gladly goes in search of some more pleasing exercise of its powers. The enjoyments of home are called up ; the days or weeks are counted which have intervened since the dear spot was left, and the many which are to pass until examination is over and these tedious books can for a time be laid aside.

But I will not attempt to imagine all the reveries in which a school girl may indulge, even when demurely looking at her book, during the allotted time for learning her lessons. Your own consciences can say how often the ringing of the recitation bell has found you unprepared, after such unprofitable aberrations of thought. But let me urge all who are conscious of such injurious habits, to strive to acquire an ascendancy over yourselves, by carefully guarding the avenues of your minds. Be resolute against admitting desultory thoughts, when you need all your concentrated mental powers to bear upon the subject before you. The task will at first be diffi-

cult, but you may in time have the satisfaction of feeling that you can fix your attention, or govern your trains of thought.

Sixth,—*Endeavor to understand as far as possible the nature, objects and ultimate end of the studies you pursue.*

Thus, when questioned as to your progress in education you may be able to state what you have done, what you design to do, and the bearing which all this is intended to have upon your future life. With such ideas as these fixed in your mind, you will not, when hereafter questioned as to what you did in school, have occasion to say with the young lady, who, returning from a boarding school, and being asked what she had studied, answered, that she 'could not tell without looking at her books, and they were all in her trunks.'

May you, my dear pupils, have your intellectual and moral natures imbued with the instructions you are now receiving; and may the fruits of an enlarged and liberal education appear in elevation of character, and the adaptation of your minds to the various exigencies of life;—may you be not only intelligent and intellectual women, but good members of society, faithful and judicious in all your relations in life, and above all, pious and consistent christians.

LECTURE VII.

Reading.—Spelling.—Articulate Sounds.

FROM our previous remarks upon intellectual improvement, it may be inferred that a proper discipline of the mind is of still greater importance to the young, than the mere acquisition of knowledge.

The various branches of modern education have been considered under two heads: 1. Such as seem chiefly valuable on account of their effect in strengthening and developing the mental powers. 2. Such as are chiefly useful for the knowledge they convey. In the former

class are ranked mathematics and languages; in the latter, geography, history, &c.

We cannot, however, make any definite classification of the different departments of learning on these principles, since the acquisition of any one science has a beneficial effect on the mind, whose capacity for receiving increases in proportion as it receives. On the other hand, there is no science but may be highly useful in its applications.

Geography, which is considered chiefly useful for the knowledge of facts which it communicates, affords exercise for many of the faculties of the mind; the *memory* in retaining facts, the power of *comparison* when viewing different countries with their peculiarities as to physical and moral condition, of *abstraction* when a river or mountain are considered without reference to any other circumstance. Geometry, which is so highly recommended by Locke and others, for its influence in training the mind to habits of reasoning and methodical arrangement, has its practical applications to astronomy, drawing, natural philosophy, and mechanics.

With respect to the various branches of natural science, botany, chemistry, &c.; it would be difficult to say whether they are most to be valued for their intrinsic utility, or for their salutary influence upon the mind. The inquiry is often made of what use can it be for a female to study botany or chemistry. Such inquiries show either an illiberal spirit, or great ignorance. Considered in reference to the mind only, these studies are of vast importance; botany accustoms the mind to systematic arrangement, definite rules of classifications, and strict attention to the import of terms; chemistry, by its minute analysis, gives a habit of discrimination and observation, which is of the utmost importance to all, especially to those who are about commencing the journey of life. Neither are these sciences without their important practical applications; these will be considered when we come to treat of each individually.

I shall now proceed to the various branches of female education, endeavoring to give general views of the different sciences, their origin and history, their advantages and practical applications. The first step in

the literary education of a child after it has learned the alphabet, is that to put the *letters* together, forming the compound sounds called *syllables*; and then to unite these syllables into *words*. This process is called spelling, and also *orthography*, from the Greek *orthos*, correct, and *graphia*, writing, meaning to write words correctly. The term orthoepy from *orthos*, correct, and *epo*, I speak, signifies correct pronunciation.

The habit of spelling correctly is an acquirement so necessary, that the want of it cannot be overlooked in any one who makes pretensions to an education above the lowest grade. There are, indeed, persons who, although deprived of the means of early improvement, have, by industry and talents, gained wealth and influence without being able to spell correctly. But such feel their deficiency with the keenest sense of mortification, and would be the first to caution young persons against carelessness in this respect.

It might seem as if in addressing the members of this institution, it were unnecessary to dwell for a moment on the importance of a branch of education which it is the business of primary schools to teach, and which you ought to be perfected in, before your entrance into this. Yet I am sorry to say, that too many, who are ambitious of the higher walks of literature, are careless in this respect.

Owing to the defective method of teaching spelling in many primary schools, pupils often leave them with little practical knowledge of this important branch. To learn to spell long columns of words, arranged without any reference to their meaning, proves not to be of much use when the pupil attempts to write. I have known a pupil who was distinguished as the best speller in a common school, and who seldom was known to 'miss a word in her lesson,' scarcely able to write a letter which could be read, from the badness of its orthography. She had been accustomed to connect the letters with the sound of the words. In schools where the only method of spelling is with the voice, it is customary for the pupils in studying their lessons to move the lips, and many cannot study without doing this. In writing, the *eye* must be practised in order to

detect erroneous spelling. It is for this reason that we approve and practise the mode of teaching spelling by *dictation*, or the pupils writing words upon a slate, or a black board, after the dictation of the teacher. By carefully following this mode, you may soon correct any bad habits with regard to spelling, which you have been suffered to form.

I trust you are all aware that with respect to young ladies who enjoy your advantages, bad spelling cannot be tolerated. This would not only be disgraceful to yourselves, but to the institution to which you belong. Some may feel that they are too old, and have too much to do to join the class in *dictation*, who are yet conscious that they are deficient in spelling. To such, a dictionary must be a constant writing companion. Yet should you, after all your care, have the mortification of seeing your compositions returned from the teachers with the spelling corrected, let me recommend to you to make a memorandum of the words misspelt, with their true orthography, so that you may be sure of not committing the same error the second time.* I have known pupils acquire such an inveterate habit of misspelling certain words, that after frequent corrections, their compositions would continue to exhibit the same mistakes; this is not only careless in the extreme, but disrespectful, showing that neither self-interest, or a regard to her teacher, operates in the mind of one who is thus, after repeated admonition, guilty of the same fault.

There are some words of irregular orthography, which many are liable to mistake; as *receive*, in which the *e* precedes *i*, contrary to more frequent usage, as in *friend*, *believe*, &c. where *e* follows *i*. Words which take an additional syllable in respect to doubling the final letter; from *permit*, we have *permitted*, while from *visit* we have *visited*. The rule for doubling the *t* in the first case, and not in the second, is that in *permit* the accent is on the

* In making out such a list of words, only the *correct* mode of spelling should be copied. If the false orthography is set by the side of the true, the person will always be in doubt as to the right way; for by the principle of association the one is no less readily suggested than the other.

last syllable, and in *visit*, on the first ; it being a general rule, that a word ending with a consonant, and having the last syllable accented, doubles the consonant on the addition of another syllable, while a word ending with a consonant and not having the accent on the last syllable, does not double the final consonant.

A few rules for spelling should be written in your memorandum book ; for dictionaries will not assist you in the case of many derivative words. Thus, from the primitive word *holy* come the degrees of comparison *holier*, *holiest* ; but if the *y* at the end of a word have not a consonant before it, it is not changed into *i* on the addition of another syllable, as from *joy* is derived *joyful*.

Connected with the subject of spelling, is that of the sounds and powers of letters. With modern improvements in education, there is a neglect of some particulars which were more thoroughly attended to when many fountains of knowledge were sealed, which are now open to the young student. Formerly the introduction to Webster's Spelling Book, containing in some three or four pages, rules for accent, the sounds of letters, &c., furnished matter for months of study. Although we would not wish to bring back those barren days of education, it cannot be denied that the scarcity of school books ensured a more thorough knowledge of some of the elementary branches.

I have sometimes found, to my great surprise, a young lady quick to comprehend mathematical truths, who knew something of Latin, and was perhaps a proficient in French, puzzled to tell the difference between *accent* and *emphasis*, or to give a rule for pronouncing *g* like *j* in *giant*, and with a hard sound in *go*, or for giving *c* different sounds in *cedar* and *cable*.

There is in the study of articulate sounds and the powers of letters, much deep philosophy ; and whoever thinks it beneath attention, little understands its importance or difficulties. It is easy to tell the difference between a *vowel* and *consonant*, a *mute* and a *semivowel* ; but to understand fully the nature of articulation, we must study the various modifications which the air sent out by the lungs, is capable of, in order to produce the wonderful variety of sounds within the compass of the human voice.

Dr. Paley observes, 'the lungs are to animal utterance what the bellows are to the organ; they are air vessels which become inflated and then collapsed as the air is inspired or expired.' You can perceive that in respiration the chest alternately expands and contracts. This motion is caused by the action of the *lungs*, which are two spongy lobes, or divisions suspended in the chest, being connected with the *trachea*, or wind-pipe at the upper part. The air which enters the lungs is received into the minute cavities of which they are composed; these are called *air cells*. We cannot at this time describe the manner in which the air is expelled from the lungs, the effect of respiration upon the blood, and the motion, of the heart caused by the constant rushing of the blood from this to the lungs and from the lungs to the heart, with the change that takes place in the nature of the blood after coming in contact with the oxygen of the air, which is inhaled by the lungs; though all this is easily explained and comprehended.

At present we are only to consider the lungs in reference to their office in furnishing the air necessary for articulating sounds. This air passes back through the windpipe, which is that tube that we can feel externally to be composed of cartilaginous rings. The top of the windpipe is called the *larynx*; at the upper part of this, and behind the tongue, is the *glottis*, a very small opening through which the breath and voice are conveyed. It is in the passage of the air through this minute aperture that articulate sounds are formed. By means of various *muscles* or threads, which draw in different directions, the glottis is susceptible of many degrees of expansion, and it is by varying this cavity that the different vowels are sounded. The air in passing a large cavity, produces a low or flat sound, through a small cavity, a high or sharp sound. This may be seen in the vowels *a, e, i, o, u*, which proceed in regular order from low and flat to high and sharp sounds.

Oral language, or speech, consists of articulate sounds; brutes utter various inarticulate sounds, expressive of their peculiar feelings. The cat when quietly reposing by the parlor fire, expresses her satisfaction by a gentle *pur-*

ring; when her capricious little mistress amuses herself by tormenting her, she vents her sorrows in piteous *mew-ing*; and when roused to anger by the cruelty of the dog, she *growls* her indignation. Mankind also have means of expressing violent emotions by *inarticulate* sounds, as by laughing, crying, or screaming. But it is only by *articulate* sounds and their representatives, that intercourse can be satisfactorily carried on between rational minds; these are the links which bind together our spirits—they are wings by whose means the soul is borne from its corporeal prison to unite in the interchange of thought and feeling with kindred souls.

May this gift of a bountiful Creator never be perverted by you, my dear pupils, to unworthy purposes; may your words be a true index of your hearts, pure, gentle and kind. A deceitful world may tell you that falsehood and dissimulation are necessary, but believe it not. True politeness is consistent with sincerity or singleness of heart, and if you once lose this, and commence a system of duplicity your whole lives may become a tissue of artifice and hypocrisy. Let your hearts be pure, and you need not fear to have their true image reflected to the world. He who gave you the power of language, adapting your bodily organs in so wonderful and complicated a manner to this object, requires that you order your speech in sincerity and wisdom.

LECTURE VIII.

Reading.

IF God had formed us for solitude, he would not have given us the wish to converse with other minds; or if, like brutes, we had been irrational, we should not have needed language. Speech peculiarly distinguishes man from the other living beings on earth.

The word language is derived from the Latin *lingua*,

tongue, and originally signified only the communication of ideas by articulate sounds. Its signification is now extended not only to the communication of ideas by writing, but we speak of the language of the passions, as expressed by various natural signs. The division which is generally made of language is into *oral** and *written*. The sciences which have an especial relation to language, considered as an instrument of conveying those thoughts, are grammar, rhetoric, logic and criticism. Grammar teaches us to arrange words, answerably to certain rules of agreement and government; rhetoric teaches the use of figurative language, and gives directions for attaining clearness and precision in style; logic teaches the method of arranging words in a certain manner, in order to establish the truth or falsehood of propositions; criticism teaches on what principles of the mind depend our tastes for various kinds of style, and brings to the test of those principles the writings of various authors. All other sciences are communicated by means of language, but these have for their object language itself, or in other words, in these sciences language is not only the instrument with which the operation is carried on, but the object upon which it is performed.

Before proceeding to consider the principles on which language is founded, we will make some remarks upon reading, which is the next step to spelling, in the scale of literary knowledge; indeed modern education usually proceeds with both at the same time, not waiting for a child to be able to spell words of several syllables, before he is allowed to experience the new emotions connected with an exercise which brings the thoughts of others to him when he is alone, and opens to him a new and delightful source of enjoyment. As soon as a child knows its alphabet, it can be taught that *m y* spell my, and that *c a t* spell cat; he can then put the words together and read, *my cat*. In a short time he can be taught to read little stories composed of words of one syllable, and from this, the transition is easy to words of more than one syllable.

* From *os*, *oris*, the mouth.

It is but a few years since teaching a child to read was a very different process from this. The little martyr in commencing his education, was sent to school to be confined for many long hours in the day, upon a hard seat, with only the occasional change of being called up for a few minutes to say his letters. The alphabet presented was often in a small, obscure type, and printed on bad paper. The teacher pointing to the letters, pronounced their names, requiring the child to repeat them after him. This becoming an exercise wholly mechanical, day after day passed bringing the poor child apparently no nearer the completion of the formidable task of learning its letters. From the principle of association he becomes able to call one letter after another when they are presented in regular order; but taken separately and in any other place than the accustomed column of letters, they are as unintelligible as Hebrew or Greek characters. I have known children of good abilities tortured for months and even years in this absurd and stupifying method of teaching; and when the teacher, in despair, has put them upon spelling, the work has been found to be accomplished; as a few exercises of this kind connect in the child's mind the *form* with the *sound* of the letters.

But here again the child's progress is interrupted by the mistaken idea, that before beginning to read, he must be able to spell words of several syllables. He reads *abasement*, *ambiguity* and *cotemporary*, with a mind entirely vacant of thought; indeed, he is not aware that the words have any meaning, or any other use than to fill the columns in his spelling book. The reading lessons first presented were often dry and abstract propositions, wholly beyond the comprehension of any child, even one whose mental powers had been properly cultivated. In the most popular spelling book* which has been in use for the last half century in our common schools, the first lessons in reading are of this nature. There are, however, in the book, some things of a different kind; and the story of the 'old man who found a rude

* Webster's.

boy upon one of his trees stealing apples,' is perused by the young student with great delight, for the simple reason, that he can understand it.

The method of infant school education affords a pleasing contrast to that just described. Knowledge is here made easy and pleasant; the intellectual faculties are roused by objects addressed to the senses. Pictures with their names attached are presented to the children; and in deciphering these names, they learn to consider *words* as representatives of *things*. In process of time, it is easy for them to learn that words may also be the representatives of *ideas*.

The different manner in which children read, who are taught by these two processes is apparent. A child unaccustomed to consider *written* language as the sign for things and ideas, or to read without knowledge or interest, would have no idea of emphasis or intonations. The habit of reading mechanically once formed, is with difficulty broken, even after the development of reason, and the cultivation of taste exhibits written characters as kindled by the fire of genius, or glowing with the most impassioned feeling.

To early defects in education, we must attribute the fact, that there are among us, few *good readers*. There are many requisites for good reading, besides early habits. It requires not only knowledge of language, of the derivation and signification of words, but an acquaintance with the passions of the human heart, and with the different tones in which they should be expressed. It requires also a quick conception to seize upon the meaning of a passage, so that for the moment, the author's spirit shall seem to be transferred to the breast of the reader. All this is necessary in order to read well; is it therefore wonderful that there are so few good readers? How common is it to hear a pathetic passage read with an air of indifference, and without the slightest intonation of the voice, a lively description without animation, or an argumentative discourse without emphasis or force.

Rules for reading may do something, example may do much; but after all, good reading must be the effect of feeling, taste and information. You can understand,

that, important as this attainment is, it is dependent on almost every other branch of education. By the general improvement of your minds, therefore, can you be expected to arrive at that perfection in this accomplishment, which a well educated woman ought to exhibit.

It is not unusual for parents on committing their daughters to our care, to express a wish that they may become good readers, before they proceed to other branches of education. But reason and experience pronounce it impossible for an ignorant person to read well; such an one may acquire an habit of calling words correctly, of minding stops and marks, and observing all the artificial rules for reading, but the soul will be wanting!—I would rather hear a person read, who did not even know that a comma was a pause of one syllable and a semicolon two, and yet could comprehend an author's meaning, and apply the rules which nature suggests, than one who had acquired a servile habit of applying arbitrary rules, without taste or feeling. Not that I would have you disregard rules, but you should remember that they have been suggested by nature, as that the sense of a passage, and not its punctuation, should guide your reading. Nothing is more common than errors in printing, by which, owing to the misplacing of a comma, or other pause, the sense of a sentence is destroyed. You must then learn to judge for yourselves where the sense requires a pause; and as to emphasis and intonations, they must absolutely be left to your own judgement. In selecting passages to read before the school,* let me advise you never to begin with any thing you do not well understand. A knowledge of languages, particularly the Latin and French, is of great use in assisting a reader in the pronunciation of words derived from foreign sources.

This however is not an occasion for particular directions as to your improvement in reading; the instructions which you are receiving† in this branch,

* On Wednesdays a certain number of pupils read before the whole school pieces of their own selection.

† The excellent treatise on elocution, by Porter, is made a text book for reading exercises and instructions.

added to your general course of education can scarcely fail of giving you this accomplishment. Some ladies have appeared to think it unfeminine to read or speak in an audible manner, affecting a low and lisping tone, probably from the idea that this is an indication of a gentle and delicate spirit; but I trust you have all too much taste and good sense, not to feel how false and ridiculous are such notions of female delicacy. The time has gone by, when it was necessary for a female to seem ignorant or childish in order to be interesting. Women are now looked upon as rational beings, endowed with faculties capable of improvement, and bound in duty to assume a high rank in the scale of intelligence. Even beauty has learned, that connected with ignorance and folly, she must give precedence to the plainest features irradiated with intelligence and good sense. I speak not now of a ball or a fashionable party, where external appearance chiefly is regarded, but of the great theatre of human life, where character develops itself, and where all find their own proper level, intellect and morals being the graduating scale.

I shall close this lecture by a quotation from an author,* who has done much for the education, and has ever shown himself interested in the improvement of our sex. 'Elocution is not sufficiently attended to, in the course of female education. I know, great improvements have been made of late, in this respect, but much yet remains to be done. It is not enough that a young lady should be taught to read with a correct pronunciation, and emphasis, and without any palpable fault. She should be taught to enter into the feelings of the author; and to make the hearers feel as if he was really addressing them. One very striking fault in the reading of many persons is, that they do not adapt their manner to the peculiar character of the composition, but always read in one uniform style. Perhaps there are some reasons why young ladies are in danger of doing this more than the other sex; or rather, why it is more difficult, in their case, to remedy this defect. Their reading is confined

* Gallaudet.

to the fire-side, and to the domestic circle; and there seems to be, therefore, less of inducement for them to aim at the life, and variety, and force, so essential in public speaking. Still, these, and every other good quality of the most eloquent delivery, ought to hold a high rank among female accomplishments. I cannot understand, why it should be thought, as it sometimes is, a departure from female delicacy to read in a promiscuous, social circle, if called upon to do so from any peculiar circumstances; and to read, too, as well as Garrick himself would have done, if the young lady possessed the power of doing it. Why may she not do this with as much genuine modesty, and with as much desire to oblige her friends, and with as little ostentation, as to sit down, in the same circle, to the piano, and play and sing in the style of the first masters? If to do the former is making too much of a display of her talents, why should not the latter be so? Nothing but some strange freaks of fashion have made the difference. But, at any rate, amid her family and friends, to how many otherwise tedious, or useless, hours of life, may a female impart both delight and improvement by *the charm of reading well*. If a wife, she can solace many a season of a husband's weariness or sickness. If a mother, what an advantage to her offspring, to have before them, as they are growing up, a living model, in the person of one whom they are led to reverence and love, of an accomplishment which our schools, and academies, and colleges, find it so difficult to impart. This latter consideration, in my view, has immense weight; for our habits of pronunciation, speaking, and reading, are first formed in childhood, and in the domestic circle; and being once formed, it is a task of extreme difficulty to alter them.'

It has been observed that a person may have genius without being a good reader, but no one can be a good reader without genius. When you find how many are the requisites for this accomplishment, you will learn not to esteem it lightly, or as a thing which may be gained in childhood, but one towards whose perfection all the different branches of knowledge tend. If you were called upon to give a preference either to reading or

music, I hope you would all prefer returning to your friends perfected in the former rather than the latter accomplishment ; for although music is a refined and intellectual enjoyment, the occasions for it in ordinary life, are far less frequent than for reading aloud. In all the pursuits of youth this should ever be the main object of inquiry, *What attainments will render me most useful and agreeable to others, and tend most to my own elevation and happiness?*

LECTURE VIII.

Grammar.

IT is not until after a child has learned to use nouns, verbs, prepositions, and other parts of speech, that he knows them as such ; in other words, he becomes familiar with language before he learns its philosophy. So it is with much of our knowledge ; we are conversant with the subjects, before we understand their natures.

The mechanic becomes familiar with the use of the pulley, wedge and inclined plane, and is able to perform various operations by their aid, without knowing any thing of mechanical philosophy. We exercise our various mental faculties, reason, remember, and compare, long before we are able to comprehend the nature of these operations.

Language was not formed according to the rules of grammar, but grammar was made to conform itself to those forms of language which had previously been established. A child learns to speak without knowing anything of the rules of grammar ; and people ignorant of the principles and rules of language, are often able to write with tolerable accuracy. Such persons, however, feel their own deficiency in this respect ; they know that they are continually liable to errors. A mariner might chance to steer his bark aright without a compass, but he would feel much more secure if provided with the means of ascertaining the correctness of his course.

Man perceiving *effects*, is led to trace them to their *causes*, though in this process he often proceeds by slow degrees. God views the first as *first*; that is, causes, and the effects following them. Human nature must be satisfied to advance from the more imperfect and complex, to the more perfect and simple; for in general, objects are first familiar to us as complex. A child can readily understand this proposition,—*the sun shines*; but it requires study and reflection to be able to analyze it into an article, a noun, and a verb; to separate these again into syllables, the syllables into letters, and then to explain the difference in the sounds and powers of these letters. The lowest human beings in the scale of knowledge, (with the exception of the deaf and dumb,) have some kind of spoken language. Many savage tribes know nothing of written language. In our country there are, however, few so ignorant as not to know how to read and write; but there are many who know nothing of grammar, or those rules and principles on which their own language is founded; and there are still fewer who comprehend those broad and general principles of grammar, which are common to all languages, and make up the science of *universal grammar*.

No person can be considered as having a liberal education, who has not studied, at least one language besides his own; and yet there are pedantic grammarians, who, with no other knowledge than that gained from the study of the English language, assume to understand the principles on which it is founded, and to be able to give rules for every doubtful case in parsing: more knowledge of the intricacies of language would teach such, that the English being composed of a mixture of other languages, on principles common to them, and yet in many cases essentially varying from these principles, necessarily presents many irregularities; instead, therefore, of attempting to prove all cases to be conformable to rules, we must often cut the gordian knot, by admitting a case to be anomalous, or sanctioned only by custom.

The study of languages, then, besides affording an excellent discipline for the mind, and presenting new and rich sources of knowledge, is important in teaching the principles of our own language. But all cannot enjoy the opportunities necessary for this acquisition; many enter this institution restricted to a few months, during which it is desirable that they should make such attainments as will be most important in after life. It would be absurd for a person to attempt to lay a broad foundation, knowing that he should never be able to erect a superstructure upon it.

A young lady having merely received the rudiments of an English education, as afforded by a common school, and who is allowed, for six months or a year, the advantage of a higher school, should not be encouraged to attempt more than she can accomplish within the allotted period. The higher branches of education, and the accomplishments of music, drawing, &c., should not take the place of grammar, geography, arithmetic, and history. The natural sciences, are within the reach of every one, who can count the stamens of a flower, can see the difference between quartz and mica, or can observe the different properties of oxygen and nitrogen. In these sciences, every lecture is exhibiting nature in a new aspect, and storing the mind with facts and observations which will be useful and interesting in every station and under every circumstance of life.

English grammar is becoming a very common study. It is now almost universally taught in our common schools, and constitutes one of the earliest, as well as the latest pursuits of all classes of students. It has its simple distinctions which can be understood by the child, and it contains subtleties which elude the grasp of the strongest and most mature intellect.

In the former and less improved state of education, a pupil commencing the study of grammar, was required to commit to memory page after page of principles, rules and exceptions: these he was required to repeat before commencing the important process of *parsing*. In some cases, teachers continued to keep their pupils

to the recitation of grammar lessons, concealing their own want of knowledge of the science, by pretending that it was necessary to understand every word of their book before they could begin to make an application of its principles and rules. Other teachers there were, who really believed that this repeating by rote constituted the whole mystery of the science, and doubted not but in hearing their pupils recite, they were teaching grammar in the most profitable manner.

Since those days of grammatical darkness and error, books have been prepared on new principles of teaching, and the *inductive* method has been generally adopted.* Here the pupil begins at once to distinguish a sentence into its different parts. Rules are not presented until the mind is led to perceive their application. There is, however, still a tendency to a great fault in both the teaching and learning of grammar; this is, to make *parsing* the ultimate object, instead of the *application of grammatical rules to writing and conversation*.

We do not often hear people say *I is, you am, &c.* But ladies who claim to be well educated not unfrequently say '*I will lay down,*' using the word *lay*, which is the past tense of the verb *to lie*, as if it were the future. We often hear adjectives improperly used as adverbs, as '*she looks beautiful,*' instead of *beautifully*. *Will* is used for *shall*, as '*I will not have time;*' the improper use of these two auxiliaries is well illustrated in the anecdote of the foreigner, who falling into a river, piteously exclaimed, '*I will drown, nobody shall help me.*' That foreigners should thus mistake the power of two words so analogous in many respects, is not strange; but those

* No elementary work has probably been of greater general utility than '*Greenleaf's Grammar Simplified.*' The teacher who is ignorant of the science, cannot but be made acquainted with it by the simple and easy manner in which parsing, or the analytical part of grammar is taught. A smaller work on the same principles has been prepared by Mr. Greenleaf, with the intention of having it afforded at so low a rate as may enable even the poorest scholar of a common school to possess a copy. Brown's and Kirkham's grammars are valuable for more advanced pupils.

who study the English grammar should apply in practice their knowledge, that *shall* used in the first person, singular, simply *foretels*, while *will*, in the same person and number, implies a *resolution* or *determination*.

It is necessary then that you should bear in mind that parsing, and learning rules, are mechanical and useless, unless you make the application of these exercises, to writing and conversation. The slightest offence against grammatical accuracy should be avoided by people of education, and yet such offences are much more common than you may at first imagine. The substituting *which* for *who*, the use of the *perfect* for the *imperfect tense*, or the *imperfect* for the *pluperfect*, the improper use of the potential mode, &c. give rise to errors, which though not of the grossest kind, are yet quickly perceived by a philologist. Perhaps I have here used a term not familiar to all of you; I will therefore observe that *philology* is derived from the Greek *phileo*, I love, and *logos*, a word, and signifies a love for, or a knowledge of words. According to the present acceptance of the term, philology implies a critical knowledge of language, considered both rhetorically and grammatically. To be a philologist requires a higher effort of mind, a more enlarged view of language than to be a grammarian. But in order to be a grammarian, it is not sufficient that you should be able to parse sentences in that kind of parrot-like manner which is often acquired; you must be able to perceive the meaning of an author, the connexion between the words of a sentence, however distant, and to supply words in elliptical cases. Some of the English poets are peculiar, for their great use of ellipsis, some especially, in the expression of sudden passion, leaving not one word merely, but several, to be supplied by the reader.

A fashion has too much prevailed among you of considering English grammar as a study only proper for younger pupils, and some have exhibited a degree of impatience at being occasionally called upon to devote some time to the review of this science. But no young lady need fear that grammar can present to her nothing new, or that one hour in a week devoted to the analysis of

English poetry, will not afford her an opportunity for intellectual exertion.

You may say, 'If grammar requires deep thought, why are children so early put to the study of it?' We would answer, that there are simple truths in this science which children can soon comprehend, as the distinction between the parts of speech; they can readily understand the nature of a *noun*, and this knowledge gives them many new ideas. We tell them that every *thing* in existence is a noun, all that they can see, hear, touch, smell, or taste, are nouns; at first, it might seem to them that no other words would be necessary but the names of these things; but of the names of real objects in nature, how small a part of our vocabulary of words consists. The child soon learns that we must have words to express *actions done to*, or *done by* these *things* which we call nouns, and thus the mind can readily comprehend that there may be words which do not stand for things, but relate to their manner of *acting*, or their *state of existence*, and that these words are called *verbs*. It is easy also for a child to understand that these things called nouns have different *qualities*; as fire is *hot*, snow is *white*; that one *person* is *good*, and another *bad*, and that the words denoting these qualities are called *adjectives*, which means words added to nouns. Thus you observe the young mind, by the study of grammar, is led to form an idea of *things* or *material objects*, of *actions* or *modes of existence*, and of *qualities* which do not exist of themselves but are inseparable from the things in which they are found. Now all this is philosophy, but it may be easily comprehended by a child old enough to understand the difference between two and four.

Thus simple are the elements of grammar. But it contains divisions and subdivisions, exceptions to general rules, and exceptions differently modified; so that, as before remarked, while children can understand its elements, the philosopher is lost in its intricacies. While employed in this study, you are giving exercise to your mental powers, invigorating them for new labors, and at the same time are gaining knowledge, which will be called into use with every sentence you speak or write.

It is very important that those who are preparing themselves for teachers, should obtain a thorough knowledge of English grammar. In correcting the inaccuracies in spoken and written language, a teacher should not only be able to point out defects, but the rules which are violated.

In concluding my remarks upon a branch of education so important, and yet, through inattention and carelessness, so often pursued with little advantage, let me admonish you against that mental indolence which frequently defeats the efforts of parents and teachers. Knowledge cannot, like houses and lands, be purchased by money. All that your parents or teachers can do, is to place within your reach the instruments of acquiring it; if you refuse to use them, if your minds are not active, to observe, compare, and remember, it will be in vain that you are placed in situations where facilities for improvement are offered. Books and lectures are of no avail to that mind which is too inert to rouse itself into action, and seize the truths which are exhibited. There is in the mind a tendency to sloth, but it also contains principles which counteract this love of ease. Of these are a desire for knowledge, an ambition to excel, and in many persons the higher moral motive of cultivating the talents committed to their charge, from a sense of duty to God. But these incitements to action are sometimes feeble; how often are the minds of some pupils slumbering in a torpid inactivity, while others are exerting all the energies of their faculties to impart instruction to them; how often is the listless eye fixed in vacancy of thought upon some trifling object, or the mind wandering on some past pleasure, or anticipating some future enjoyment, while their teachers, with intense anxiety to discharge their high responsibilities, are exerting all *their* powers to explain something which they feared might not be understood, or to communicate such knowledge as the pupil will need in her future progress in life. Would not a spectator, ignorant of the truth, suppose that the teacher, and not themselves, was to be the gainer by their attention?

I have read of a certain professor,* who always lectured to one particular student, regulating his discourses by his appearance: when he looked as if he did not comprehend the subject, the professor perceived that his explanation had not been clear, and endeavored to illustrate his ideas more fully; when the student's countenance was illumined with the glow of intelligence, the professor knew that he was understood, and that his instructions had taken effect. How many different expressions do I at this moment behold before me! How many youthful countenances, lighted up by the spirit within, animate me in the discharge of my duties!

Would that all of you could realize the importance of this present season of preparation for your future lives. The scriptures point out two classes of people, the wise and the foolish. Though intellectual gifts are not always most conspicuous in the most virtuous, it is generally the case that the latter more assiduously seek to make a suitable improvement of advantages afforded them. In every large collection of human beings assembled for the purpose of instruction, we are struck by contrasts; some seek to know the truth and to learn their duty, while others, alas, too many, appear forgetful of the momentous interests which hang upon the present moment. Have we not reason to believe that these will at last be found among those to whom it will be said, 'Depart from me; ye have chosen your own ways, ye have loved pleasure rather than wisdom.'

LECTURE X.

Ancient Languages.

In proceeding to consider the study of the ancient languages, I would wish you to understand that I do not recommend them, except where circumstances permit a

* Professor Jardine, of Edinburgh.

liberal course of education. You will recollect the remarks on this subject in our last lecture, and will not therefore be likely to imbibe the mistaken idea, that all young ladies are called upon to become Latin and Greek scholars, or even to attempt acquiring the rudiments of any other language than their own.

It is the pride of this institution, that the daughter of the most humble mechanics and farmers, and of the wealthiest and most powerful of our citizens, here meet on terms of equality, except as virtue and talents make a distinction. Our country is probably the only one in the world which exhibits such a scene. In England, the nobility would feel it a degradation to have their daughters educated in common with the untitled. The gentry who may not aspire to mingle with the nobility, still recoil from plebeian contamination. In the English universities, it is true, all may find admittance who are suitably qualified for entrance, but the sons of the nobility have their peculiar privileges. The commoners are not permitted to eat with them, and by this and various other distinctions are constantly reminded of their own inferiority.

Unfortunate state of things, when the one class, being led to feel that rank alone can give elevation, are thus deprived of an important stimulus to mental effort, and the other, depressed by the abjectness of their situation, can scarcely hope, by the greatest efforts, to rise above the sphere in which they find themselves placed!

In our country, in female as well as male institutions, these things are different. We know of no hereditary claims to respect, which can set aside the superior claims of merit; and if the attempt is made to render any school in our country of an *exclusive* character, it must, from the very genius of our government, and the nature of our institutions, prove as abortive as it is ridiculous.

Some may indeed, from a desire of this *exclusiveness*, pay such extravagant demands for the education of their daughters as cannot be afforded by persons of moderate fortunes; but the children thus educated will be obliged

when they come forth into the world, to run the race of life by the side of those, who, having been inured to competition, are strengthened and prepared for the contest. When distanced in this race, and left to see their despised inferiors far before them, it will but add to their chagrin, that they had once been flattered with the idea of possessing peculiar advantages.

I have perhaps digressed too far from the subject of this lecture, but it has been to show you that although a different course of study may be recommended to pupils under different circumstances, we hold to principles congenial with the spirit of our republican government.

Mankind must act according to existing circumstances, and prospects which are at the time being presented. In accordance with these views, I must advise you to such studies and pursuits as now seem most likely to be useful to you in after life. And yet we well know that appearances may be illusory. Many a piano and harp have been destined to an auction sale, while their accomplished mistresses have been forced to exchange elegant houses and furniture for the coarsest accommodations. On the other hand those who never aspired to any accomplishments, whose minds have been only adorned with plain good sense; and this perhaps little cultivated, are by an unexpected combination of circumstances, brought forward into high and conspicuous stations. But notwithstanding the possibility of these reverses, the present station and the pecuniary means of the parent must regulate the education of the child.

When the situation of a parent allows the opportunity of a liberal course of study, I consider that the languages should form the basis of education; that girls as well as boys should be put to the study of Latin as soon as they are able to read intelligibly.* A child of six or seven

* I am aware that this is a controverted point; but I believe that persons engaged in education are becoming more confirmed in their opinions, in favor of giving to young females some knowledge of the ancient languages. Mr. Emerson's lecture on Female Education, delivered before the American Institute of Instruction, contains some excellent and judicious remarks on this subject.

years of age can learn the conjugations of verbs, the declensions of nouns, pronouns and adjectives. The memory at this age is active and retentive, and if the other mental powers are at the same time cultivated, there will be no danger of their suffering by the efforts of this.

The exercise of translating from one language to another, calls up the powers of comparison and abstraction, quickens the imagination, matures the judgment, and gives enlarged views of the general principles of language.

In addition to the utility of the study of Latin in the discipline of the mind, we must count among one of its important advantages, the facilities which it gives for the attainment of those modern languages which are derived from it. Our own language, has borrowed much from the Latin. The Saxon was the language of England when that country was subdued by the Romans under Julius Cæsar. Like all conquered nations the English gradually suffered a change in their language, and thus the language of the Romans became incorporated with that of the Saxons; and in process of time, the Danish and Norman conquests effected still greater changes.

The Latin language, like the character of the people by whom it was spoken, is forcible and majestic. Among its most distinguished prose writers were Cicero, Tacitus, Sallust, Livy and Cæsar; its most celebrated poets were Horace, Ovid and Virgil. This language is still used by the Roman Catholics in their public prayers, and is spoken familiarly by the learned of Europe, particularly in Germany.

An elegant writer,* observes, 'there is not a single language of modern Europe, in which literature has made any considerable advances, which is not directly of Roman origin, or has not incorporated into its very structure many of the idioms and peculiarities of the ancient tongues. The English language affords strong illustration of the truth of this remark. It abounds with words and meanings drawn from classical sources.

* Judge Story.

Innumerable phrases retain the symmetry of their ancient dress. Innumerable expressions have received their vivid tints from the beautiful dyes of Roman and Grecian roots.'

The same writer, remarking upon the rich treasures of ancient literature, and the idea that these can be conveyed to the mind through the medium of translations, says, '*these may be read in our vernacular tongue*—aye, as one remembers the face of a dear friend, by gathering up the broken fragments of his image,—as one listens to the tale of a dream well told,—as one catches the wave of the ocean in the ripple of a rivulet,—as one sees the blaze of noon in the first glimmer of the twilight.'

It is not however to be expected that among the many pursuits to which the female mind must be directed, and with the comparatively short period which is allowed them for education, that many young ladies will acquire that facility in reading Latin which is necessary to the enjoyment of its classical literature. But a knowledge of the principles on which this noble language is constructed, and a limited acquaintance with its beauties are invaluable.

Why should these be denied to us merely because we are women? I know it has been customary among many to ridicule the idea of females pursuing what are called *masculine studies*. The excellent and wise Hannah More was so intimidated by this, that in her *Cœlebs* she makes her heroine dread the discovery of her studying Latin, as if it were a crime, and overwhelms her with blushes and confusion when the secret is revealed.

When such occurrences shall no longer be rare, then will they cease to excite astonishment, and females may be allowed to read Virgil, or even Homer, as undisturbedly as if they were working lace or embroidering muslin.

In some essays on female education ascribed to her ladyship the Countess of Carlisle, I find the following remarks: 'As for Homer and Virgil, I fancy you must be content to taste these as pure as the labors of the

learned afford them; the Greek and Latin tongues *forming* no part in the polite system of female education at present, nor certainly *ever can* in the useful.' It is probable that had her ladyship been permitted to test the *utility* of these studies by experience, she might have judged differently; she would probably have gained from them a better knowledge of the construction of English sentences than is exhibited in the preceding quotation, some parts of which it would certainly puzzle a grammarian to parse according to any rules of the English grammar. It is a little surprising that she should have decided so positively on this subject, especially as she had observed in a preceding sentence, that 'it is a property of ignorance to esteem nothing valuable that it does not comprehend.'

Before dismissing the subject of the Latin language, it may be profitable to those of you, who have recently commenced in this study, to receive a few *general directions* for translating and parsing.*

In translating Latin into English,

1. Find what is the *nominative case* or subject of the verb.
2. Find the words which belong to the noun or subject of the sentence; these words are sometimes adjectives, which in English are usually placed before the noun; but in Latin are often placed after, and sometimes separated by many intervening words from the noun to which they belong. It is the agreement of adjectives to their nouns, in number, gender and case, which enables us to ascertain to which of the nouns in a sentence they belong. It may be observed, as there are no words in Latin which answer to our articles *a* and *the*, in translating we add these articles according to our understanding of the sense; thus, the word *rex* may be read either *a king* or *the king*. This want of the article in Latin is considered a defect, as it often makes the sense appear doubtful.
3. Besides the adjectives which are connected with the noun there may be also a noun in the *genitive case* which, depending on the former noun, should be construed immediately after it.
4. A *participle* may belong to a noun, and require to be construed before the verb.
5. The *verb* is a very important word in a sentence. When a noun is translated, the verb to which it is subject naturally becomes a subject of thought; and although we often bring in

* Cleveland's First Lessons in the Latin Grammar is an excellent work for beginners; after this, the Liber Primus and Latin Reader may follow. The custom of commencing the reading of Latin with the poets, is not recommended.

many other words before the verb, it will be more easy to arrange those words in proper order, when we know what the verb is; therefore as a general rule, it is best to ascertain immediately after translating the noun, to what verb it is nominative.

6. If the *verb is active*, it will naturally be followed by a noun in the accusative case, but this noun may not be placed directly after the verb as in English, but if the sentence be long, the accusative case may be at some distance from the verb.

7. After a preposition, it is necessary to look for a noun either in the accusative or ablative case.

8. As the Latin language is very concise and elliptical, there are often many words to be supplied in order to complete the sense when translated into English.

The rules I have now given for translating may be remembered by you, because they are few and very general. I will trespass on your patience by adding a few directions for *parsing* Latin.

1. You know that Rule I. (Adams' Latin Grammar,) teaches that the adjective must agree with its substantive in several particulars, as case, number and gender. In order to ascertain these particulars, you must find to what declension the adjective belongs; then, by declining it according to the rule for the declension of adjectives, (which you can find by referring to your grammars, if it is not in your memories,) you will come to the termination similar to the word before you; thus you will be able to tell the case, number and gender of your adjective. And as for the noun to which it belongs, when you find one of the same case, number and gender, you may safely conclude they go together.

2. When you parse a noun, you must first find of what declension it is; then you may, by varying it according to that declension, ascertain its number and case. The gender will depend in some degree upon the declension which to the noun belongs; for instance those of the first declension, are feminine; those of the second declension which end in *us*, are masculine; those which end in *um* are neuter. There are a few exceptions to these general rules, but in learning any science it is best to get clear ideas of the general rules, and learn the exceptions; afterwards, for it is usually the case that in attempting to learn everything at once, the ideas become confused, and nothing is clearly understood.

3. If the noun which you are parsing be in the nominative case, you must find the verb it governs; if it is in the genitive, it will most generally be governed by some other noun; if it is in the dative, it will be governed by some adjective or verb; if in the accusative, it will be governed by an active verb or preposition, or placed before the infinitive mode; if in the vocative, it will stand unconnected with other words, or have an interjection joined with it; if in the ablative, it will be governed by a preposition, depend on circumstances of time, manner, &c., or be connected with a participle.

You are not to expect in this sketch all the important rules for parsing; you are here merely shown a manner of generalizing; each one should, however, follow that mode of condensing rules and principles which most accords with the laws and operations of her own mind. This process should be performed in every study you pursue; when you have done this, and not till then, you may consider that the knowledge communicated to you has become truly your own.

In the study of the Latin or any other language, you may feel encouraged by the consideration that every step you advance is rendering the next more easy, and especially by the thought that when your mind has once acquired a knowledge of the general principles of language, you will find the acquisition of new tongues can be made with great facility. After learning one foreign language you can probably learn two more with less labor. In possession of three languages, you could probably acquire six in less time *than the first*—and so on in a compound ratio. This may seem extravagant, but the testimony of those who have been distinguished for their extensive acquaintance with languages goes to confirm the opinion.

I shall now proceed to give some general rules for *Quantity*, *Accent*, and *Latin verse*.*

You will remember that *Quantity* is the *space of time* taken up in pronouncing a syllable. *Accent* is the tone of voice with which a syllable is pronounced.

Rules for Quantity.

Syllables with respect to their quantity are either long or short. A long syllable requires double the time of a short one in pronouncing. Some syllables are *common*; that is, sometimes long and sometimes short:

1. A vowel before another vowel is *short*, as *mĕus*.
2. A vowel before *two consonants*, or before a *double consonant* is *long*, (by position, as it is called) as *ārma āxis*.
3. A vowel before a mute and liquid is *common*, (that is sometimes long and sometimes short) as *volucris*, *tenebræ*.
4. A contracted syllable is *long*, as *nīl* for *nihil*.
5. A diphthong is always *long*, except that *prae* in composition before a vowel is usually short, as *præire*.

Final Syllables.

A in the end of words declined by cases, is *short*, as *musă*. An exception to this is, that the ablative of the first declension is long, as *musâ*. *E*, at the end of a word is *short*, as *natĕ*. (Exceptions must be made of monosyllables and nouns of the first and fifth declensions). *I*, final, is *long* with few exceptions. *O*, final, is *common*. *U*, final, is *long*; *Y*, final, is short, as *fructū*, *moly*. *As*, *es* and *os* in the end of a word are *long*, as *mās*, *quiēs*.

* Every English as well as Latin scholar should be acquainted with these rules, as on these chiefly depend English pronunciation and versification.

Rules for Accent.

Every monosyllable is accented, Ex.—*Tu*. In words of two syllables the first is accented. Ex. *mūsa*. In polysyllables the accent is on the penultimate, if it is a long syllable; but if the penultimate be a short syllable, the accent must then be placed on the ante-penultimate.

You will observe that ultimate, means last; penultimate, last but one; ante-penultimate, last but two.

There are three accents, distinguished by their different sounds; *Acute*, or sharp accent, raises the voice in pronunciation, as in *profer* (proffer) *Grave*, or bass accent, depresses the voice or keeps it in its natural tone as *doctè* (learned). This accent probably belongs to all syllables which have no other. *Circumflex* accent first raises and then sinks the voice, on the same syllable, and is therefore only placed on long syllables, as *amāre* (to love).

Of Verse.

A verse is a certain number of long and short syllables disposed according to rule. It is so called from the Latin verb *verto* (to turn), for when the number of syllables requisite is completed, we always turn back to the beginning of a new line. The parts into which we divide a verse, to see if the number of syllables is correct, are called *feet*.

Poetic Feet.

Poetic feet are of either two, three, or four syllables. When a single syllable is taken by itself, it is called *Cæsūra*, which is commonly a long syllable.

Feet of two Syllables.

Spondeus consists of two long syllables, as *ōmnēs*. *Pyrrhichius* consists of two short syllables, as *dēūs*. *Iambus* consists of one short and one long syllable, as *āmāns*. *Trochæus* consists of one long and one short syllable, as *servūs*.

Feet of three Syllables.

Dactylus consists of one long and two short syllables, as *scrībēre*. *Anapaestus* consists of one long and two short syllables, as *pīetas*. *Amphimacer* consists of a long, a short, and a long syllable, as *chārītās*. *Tribrachys* consists of three short syllables, as *dōmīnūs*.

Scanning.

The measure of verse, or the resolving it into the several feet of which it is composed, is called *scanning*.

Hexameter.

The hexameter, or heroic verse, consists of six feet; of these, the fifth is a *dactyle*, and the sixth a *spondee*; all the rest may be

either dactyles or spondees. A regular hexameter verse cannot have more than seventeen syllables, or fewer than thirteen. Sometimes a spondee is found in the fifth place; it is then called spondaic verse; it is used when anything grave, slow, sad or large is expressed. It commonly has a dactyle in the fourth place, and a word of four syllables at the end.

Sometimes there remains a superfluous syllable at the end. But this syllable must either terminate in a vowel, or in a vowel with the consonant *m* after it, so as to be joined with the following verse, which in the present case must always begin with a vowel.

The *Cæsura* is, when, after a foot is completed, there remains a syllable at the end of a word to begin a new foot. The *Cæsura* is variously named, according to the different parts of the hexameter verse in which it is found. The most common and beautiful *Cæsura* is when it falls upon the fifth half foot, or the syllable after the second foot; this is called the *Penthemim*. When the *Cæsura* falls on a syllable naturally short, it renders it long. The chief melody of a hexameter verse, in a great measure depends upon the proper disposition of the *Cæsura*.

Figures in Scanning.

Synalæpha, is the cutting off a vowel or a diphthong, when the next word begins with a vowel; it is sometimes neglected, and seldom takes place in the interjections, &c. Long vowels and diphthongs when not cut off are sometimes shortened.

Ecthlipsis is when *m* is cut off with a vowel before it at the end of a word, because the following word begins with a vowel.

Synæresis, is the contraction of two syllables into one. *Diæresis* divides one syllable into two. *Systöle* is when a long syllable is made short. *Diastöle* is when a syllable usually short is made long.

Figures of Diction.

Prosthesis is when a letter or syllable is added to the beginning of a word, as *gnarus* for *navus*. *Epenthesis* is when a letter or syllable is interposed in the middle of a word, as *induperator*, for *imperator*. *Syncöpe* when a letter or syllable is taken from the middle of a word, as *dixti* for *dixisti*. *Apocöpe* when a letter or syllable is taken from the end. *Metathesis* is when a letter or syllable is transposed. *Antithesis* is when one letter is put for another.

We will now dismiss the Latin, and hasten to finish our view of the dead languages with a few remarks upon the study of Greek and Hebrew.

The elements of the Greek language are by no means as difficult of attainment as is generally believed. The alphabet may be learned in a few hours, and after stu-

dying a pronoun, a verb, and a noun, the pupil can commence the translation of such simple sentences as contain words analogous to those whose declension and conjugation have been studied.* Other nouns, verbs, &c. can then be studied, and application be made as before. In this way, even a few weeks of study of the Greek language may prove of great advantage.

To be a Greek scholar, it requires more time and labor than females in general can give from their other pursuits; and should some proceed so far in the study as to perceive the difficulties still to be surmounted, a sense of their own comparative ignorance should tend to render them humble and unpretending, rather than confident and pedantic.

This harmonious and beautiful language is that of Aristotle, Pindar, Homer, and many other sublime writers, whose works contain the germ of most of the sciences and discoveries upon which the moderns have so much prided themselves.

‘It was Homer,’ says an energetic writer,† ‘who gave laws to the artist; it was Homer, who thundered in the senate; and more than all, it was Homer who was sung by the people; and hence a nation was cast into the mould of one mighty mind, and the land of the Iliad became the region of taste, the birth place of the arts. Nor was this influence confined within the limits of Greece. Long after the sceptre of empire had passed westward, genius still held her courts on the banks of Ilysius, and from the country of Homer gave laws to the world. The light, which the blind old man of Scio had kindled in Greece, shed its radiance over Italy, and thus did he awaken a second nation to intellectual existence. And we may form some idea of the power which this one work has to the present-day exerted over the mind of

* A small work recently published by Professor Goodrich, entitled, ‘Lessons in Greek Parsing,’ conducts the pupil in this easy and agreeable manner through the elements of the language. The author, in having made the access to this beautiful language thus easy, deserves more from the public than many a ponderous writer of unread quartos.

† President Wayland.

man, by remarking, that nation after nation, and century after century, has been able to do little more than transpose his incidents, new name his characters, and paraphrase his sentiments.'

The language of Homer, with the fortunes of Greece, has undergone an essential change, and is modified with the intermixture of the Turkish and some other modern languages. The modern Greek, though highly melodious, is far less distinguished for sublimity than the ancient.

Many of our scientific terms are derived from the Greek. In botany, the names of the classes and orders of plants may be traced to this source; as *monodelphia*, from *monos*, one, and *adelfia*, brotherhood. In chemistry, we have the word *oxygen*, from *oxus*, acid, and *gennao*, to produce. Many words, not considered technical, are of Greek origin, as athletic,* gymnastic,† theatre,‡ &c.; *theology*, from *theos*, God, and *logos*, a word or discourse, signifying the science which treats of God; *physics*, from *phisis*, material nature, and *metaphysics*, signifying the study of what is above or beyond matter.

Those of you, who have merely learned enough of the Greek language to trace the derivation of words, may consider that you have gained a key to an important branch of knowledge; by means of which your own language will appear in a new and interesting light.

The Greek language is that in which the New Testament was written. To be able to read this holy volume in the original, is a very important attainment, and on account of the simplicity of the style, less difficult than is generally imagined. To an English lady,§ literature is indebted for an excellent translation of Epictetus, one of the Grecian poets.

The Hebrew is the language of the ancient Israelites, and that in which the Old Testament was written. It is

* From the Greek *athletis*, a wrestler.

† From *gymnasium*, a place where athletic exercises were performed.

‡ From *theatron*, a place where shows were exhibited.

§ Mrs. Elizabeth Carter.

supposed to be the most ancient language now known, The Jews still make use of it in their synagogues. A knowledge of the Hebrew is highly important for ministers of the gospel, in order that they may understand the scriptures of the Old Testament in their original strength and beauty. Few ladies attempt this study. Its connexion with our own language, or with science is but slight. The alchemists however had borrowed many terms from this language, and these words along with the fragments of the science have become incorporated with chemistry.

For the encouragement of those who may desire to become acquainted with languages, I will mention the acquisitions of a young lady with whose biography I hope many of you are already familiar; I mean Elizabeth Smith, of England, who died at the commencement of the present century.—Her biographer observes that she early showed a great desire for instruction, and devoted that time which is often spent in trifling amusements to the acquisition of knowledge. Under adverse circumstances of fortune, which allowed her few advantages, she early learned the Spanish and Italian languages, and became familiar with geometry. After this, she acquired the German, Latin, Greek, and Hebrew languages, and made considerable progress in the Arabian and Persian. She was, says her biographer, ‘a very fine musician, and those ladies who devote almost their whole time to this single accomplishment, may feel astonished that one of their own sex should have been able to unite with it such proficiency in abstruse sciences. She was at the same time remarkable for attention to domestic employments, and for her delicate taste in dress, displaying as much skill in making a gown or cap as in explaining a problem in Euclid or a difficult passage in Hebrew.’ Of her Hebrew translations one of the most learned scholars of Europe observes, ‘This work strikes me as conveying more of the true character and meaning of the Hebrew than any other translation that we possess.’ This character, so perfect in intellect, so pure and amiable in morals, possessed also that crowning ornament, without which, as a whole, it would have been imperfect—piety. She was called to an

early grave ; but the embalming spirit of religion had anointed her body for burial, and preserving in all their loveliness the beautiful lineaments of her mind, prepared it for a high station among those pure and holy intelligences, who differ in degree of knowledge and happiness, as ' one star differeth from another star in glory.'

LECTURE XI.

Modern Languages.

SOME of the modern tongues are generally admitted to be desirable accomplishments for young ladies. Facilities for acquiring these are, however, less frequent than for learning Latin and Greek. I refer here to those cases in which girls are educated at, home during the first twelve or fourteen years.

People who reside in the country, unless in the vicinity of literary institutions, seldom have an opportunity of learning the modern tongues from well qualified teachers, as such can find more eligible situations in populous places. But there are few country towns where some persons might not be found competent to teach the dead languages. The clergyman, lawyer or doctor of the parish would probably be willing to devote a small portion of time to a review of classical studies, or a young lady's father or brother may be able to assist her in acquiring the elements of the dead languages. A pupil thus prepared to commence French, or any other modern language, may be expected to make rapid progress.

Few except the natives of a country are competent to teach its language. There are probably some English teachers of the French, who by long practice have acquired a tolerably correct pronunciation ; but in general it is not advisable to commence this language under any but a native teacher. The Spanish pronunciation, being much more easy to an English tongue, may be better

taught by an English teacher than the French or Italian. The Italian is less difficult than the French.

Books which attempt to give the sounds of French words by combinations of English letters, always mislead a student. For example, in a work professing to be a guide to French pronunciation, I find a direction to pronounce the word *brouillard*, a storm, thus, *broolar* ; the *l* being marked as silent, the pronunciation would be *brooar*. Those of you who are accustomed to the peculiar changes of some of the organs of speech in the pronunciation of the French liquid sounds, will at once perceive the impossibility of expressing the same by any combination of English sounds. I might add many other examples equally tending to show that the French, as a spoken language, must be learned orally. Those who have not the advantages of acquiring the French accent, may, even without a teacher, learn to translate the language. While no other tongue is so difficult to pronounce as the French, no other is so easily translated into English.

At the present time, the French is more generally spoken than any language in the world. It is a medium of communication common to the polite, as is the Latin to the learned. It is the language in which the diplomatic correspondence of the different courts of Europe is usually carried on. It is a familiar sound in the streets of St. Petersburg, Rome, Madrid, London and New York. The educated South American speaks French almost like a Parisian ; and few of the inhabitants of the West Indian islands are ignorant of the language. In many parts of Canada and Louisiana it is the prevailing tongue.

You see then how valuable must be a language so extensive in its use ; and the opportunity which is here enjoyed of acquiring it in its native elegance of pronunciation, should be prized and improved by those who are thus privileged.

The French literature is rich and diversified. It is not, however, to be expected that all who study this language will become so familiar with it as to be able to speak or even to read it with fluency ; but it should be accounted no useless attainment to be able to translate the

occasional French sentences which you will meet with in the course of your English reading. At the present day, scarcely a new publication appears, which does not contain more or less French words and sentences. They are also much introduced into conversation; and we are constantly hearing people, (and among these, some who know nothing of the language except as they provide themselves for particular occasions,) expressing themselves after the French *tournure*, and in French phrases.

Many of the French words which may be considered as adopted into our own language are still pronounced with their original French sounds, as *début*, *dépot*, *eclat*, &c. It would appear ludicrous to a polite ear to hear these words pronounced according to the analogies of the English.

A sketch of the history of the French language, with some remarks upon its literature may not be useless or uninteresting to you. The French language, is comparatively of modern origin. France was anciently called *Gaul*, or Gallia. The first inhabitants of this country mentioned in history were the Celts. Some vestiges of their language are said to appear in the dialect of the peasants of Brittany in France, called the Armoric. When Gaul was conquered by the Romans under Julius Cæsar, the Latin was introduced, as it was into England about the same time. The language of the Franks and other savage tribes gradually became incorporated with that of the Gauls and the Romans; and the whole formed a corrupt dialect which was called the *Romance*, or *Roman rustic*;* because spoken by the peasantry, who

* The following is a specimen of the old romance, or Roman rustic, as exhibited in Morland's history of the churches of the valleys of Piemonts.

'Car la plus fort arma dura que lo Diavol aya son las fennas, laqual cosa es demonstra, car lo Diavol eslegic la fenna a decebre lo premier home. Et Balaam acer eslegic aquestas a degittar lo filli d' Israel.'

'Now the strongest arms the Devil hath are women, which thing is shown in that the Devil made choice of the woman to deceive the first man by. And Balaam made choice of them to reject the children of Israel.'

had mixed their own language with Latin words and idioms. This dialect was divided into two branches, which received their names from the respective modes of pronouncing the terms for the affirmative *yes*. In the southern part of France, this was expressed by *Oc*, and their dialect was called, *langue d'Oc* (the language of *Oc*) or Occitanic dialect. North of the Loire, where *yes* was expressed by *oui*, the language was called *langue d'Oui*; from the latter was derived the Modern French. In the 12th century the south of France was united under one government called Provence, and the *langue d'Oc* then took the name of Provençal.* At this time the Northern dialect assumed the name of French. The accent of the people in the south of France, at this time, differs considerably from that of the Parisian.

It was about this period that the Troubadours, or wandering minstrels, gave to the French people a taste for poetry and romance. The Crusades had served to foster the most extravagant passions, and had given rise to the most romantic incidents. The human mind glowing with new and tender images, and luxuriating in the unrestrained freedom of those lawless days, exhibited a strange mixture of wildness and refinement. This was a period peculiar to itself, and one which has furnished modern fiction with its choicest materials. The very name of Chivalry, knight or troubadour, seems to call up the spirit of curiosity and give interest to a tale or song.†

The song of the Troubadour was heard with equal delight in the castle and in the cottage, by courtly dames and humble peasants. None of the productions of those poets are now celebrated in literature.

The fifteenth century produced a poet of great taste and sweetness, Charles d'Orleans, father of Louis XII., and uncle of Francis I. He composed most of his po-

* The mark under the *c*, in the word Provençal, is the French cedilla, which denotes that *c* has the sound of *s*.

† Mrs. Hemans' popular song of 'The knight look'd down from the Paynim's Tower,' is thus most happily chosen for effect.

etry while imprisoned in England, whither he was carried after having been captured at the battle of Agincourt. Cotemporary with this poet, was Clotilde de Sarville, many of whose thoughts were strikingly beautiful, and whose style was highly polished for the time in which she wrote.*

* It may not be uninteresting to the pupil in French to note the peculiar orthography of that remote period, while all may delight in those sweet and touching expressions of maternal love of this female writer of the fifteenth century.

VERSLETS A MON PREMIER NE.

- ‘ O cher enfantelet, vray pourtraict de tou pere,
Dors sur le seyn que ta bousche a pressé !
Dors, petiot ; cloz, amy, sur le seyn de ta mere,
Tien doulx oeillet par le somme oppressé.
- ‘ Bel amy, cher petiot, que ta pupille tendré,
Gouste ung sommeil qui plus n'est faict pour moy !
Ie veille pour te veoir, te nourrir, te défendre—
Ainz qu'il m'est doulx ne veiller que pour toy !
- ‘ Estend ses brasselets ; s'espand sur lui le somme :
Se clost son œil : plus ne bouge—il s'endort—
N'estoit ce tayn flowry des couleurs de la pomme,
Nele diriez dans les bras de la mort ?
- ‘ Arreste, cher enfant !—j'en frémy toute engtiere !
Réveille-toy ! chasse ung fatal propoz !
Mon fils !—pour ung moment—ah ! revoy la lunicre !
Au prilx du tien rends-moy tout mon repoz !
- ‘ Doulce erreur ! il dormoit—c'est assez—respire ;
Songes légiers, flattez son doulx sommeil !
Ah ! quand voyray cestuy pour qui mon coeur sospire,
Aux miens costez, jouir de son réveil ?

LINES TO MY FIRST BORN.

- ‘ Sweet babe ! true portrait of thy father's face,
Sleep on the bosom that thy lips have prest !
Sleep, little one ; and closely, gently place
Thy drowsy eyelids on thy mother's breast.
- ‘ Upon that tender eye, my little friend,
Soft sleep shall come, that cometh not to me !
I watch to see thee, nourish thee, defend—
'Tis sweet to watch for thee—alone, for thee.
- ‘ His arms fall down ; sleep sits upon his brow ;
His eye is closed : he sleeps—how still and calm !
Wore not his cheek the apple's ruddy glow,
Would you not say he slept on death's cold arm ?

In 1539, Francis I., called the *Father of letters*, established a professorship of the French language, and forbade the use of the Latin in public documents and judicial proceedings. During his reign the language was greatly improved, and literary men received the most munificent encouragement. Clement Marot, a poet of those days, is said to have used every effort to reform the barbarities of his language, and to introduce refined and elegant expressions. He acknowledged that to the conversation of polished females he was indebted for the improvements which he introduced.

In 1635, the *Académie Française*, consisting of forty members, was established by Cardinal Richelieu. To this body was consigned the care of the language and literature of the nation.

In 1694, was published the dictionary of the Academy, which continued to be the standard of the French language until the revolution of 1789; since which time, new words and phrases, corresponding to a new state of things, have gradually been introduced.

To Malherbes, a man of great genius and learning, whose labors preceded the reign of Louis XIV. is ascribed the honor of having rescued the French language more effectually from foreign idioms than any other writer had done. So peremptorily did he insist on this point, that he was called the '*Tyrant of words and syllables*'; and it is said, that when in the hour of death his confessor was expatiating on the joys of heaven, he begged him not to speak on such a subject in language so vulgar and inaccurate.

The reign of Louis XIV. is considered as the Augus-

'Awake, my boy!—I tremble with affright!

Awake, and chase this fatal thought!—unclose

Thine eye but for one moment on the light!

Even at the price of thine give me repose!

'Sweet error!—he but slept—I breathe again—

Come gentle dreams, the hour of sleep beguile!

Oh! when shall he, for whom I sigh in vain,

Beside me watch to see that waking smile?'

For this translation, and some facts relating to French literature, the author is indebted to the *North American Review*.

tan age of French literature. Montaigne at this period complained of the fluctuating character of his language, and endeavored to give it energy and stability. Corneille, Moliere, Racine and Voltaire successively occupied the public with their dramatic writings. Fenelon, the amiable and pious author of *Telemachus*, distinguished himself for several valuable and interesting works. Rousseau rendered himself famous for talents, and infamous for the abuse of them. Condillac was an able metaphysical writer of a later period; although professing himself a disciple of Locke, he seems to have misconceived the opinions of that writer in some important points, especially with regard to *sensations*; these Locke considered to be the *moving cause* of certain mental operations, which, being *independent* of matter, were therefore entirely different from *sensations*. He termed them ideas of *reflection*. Condillac erroneously supposed the language of Locke to be, that all our mental operations were *sensations*, and the *shadows* of *sensations*. Mr. Locke's *ideas of reflection* were called, in the system of Condillac, *sensations*. Mr. Locke termed *feelings*, or *reflections*, the mind looking in upon itself; while Condillac probably understood him to mean the *reflected images* of sensations. But although we admit that sensation seems to awaken in the mind the germ of thought, we cannot consider our intellectual states of mind or our emotions merely as sensations under a new form.

Among the female writers in the French language, are Madame de Genlis, distinguished for the number of her works, (amounting to more than one hundred volumes), Madame de Staël, a woman of a powerful and masculine intellect, and Madame de Sevigne, whose letters are considered as patterns of epistolary writing. I would also mention Madame Campan, whose ideas on female education were more just and solid than most of her cotemporaries.

We have already devoted more time to the consideration of languages than was at first intended, and must omit enlarging upon the Spanish and Italian literature. These are much less extensive than the French; yet these languages possess claims to the attention of the student

who has leisure and opportunity for acquiring them. The Spanish excels in dignity, the Italian in sweetness. From their analogy both with the French, and Latin a knowledge of those languages may be easily obtained by one who understands either of the two latter.

With this lecture will close our view of languages, to which branches of study we have hitherto given our attention, have all a relation as to one common object. Several of the first lectures of our course were preliminary considerations on the subject of education in general. In commencing with the individual branches, we considered the process of combining articulate sounds in a manner to form words, the importance of a knowledge of orthography, and pointed out some methods for correcting bad habits of spelling.

Secondly, we remarked upon the process of learning to read, the requisites for the good reader, a peculiar importance of this qualification to our own sex, and some of the defects most common in this department of education.

Thirdly, we remarked upon that science which gives rules for the construction of sentences, and by means of which language receives its character and permanency. That mode of speech which has no grammatical standard, can be considered only as a kind of savage dialect. As a people become civilized, they naturally fix the boundaries and idioms of their language.

Fourthly, from the consideration of grammar, or the study of our own language, we proceeded to consider the use of the Latin, as a branch of female education. On account of its utility in giving correct ideas of our own and other modern tongues, and especially its important aid to mental discipline, it was recommended to those who can have the advantages of a liberal course of study. Our view of ancient languages closed with some brief remarks upon the Greek and Hebrew.

Fifthly, we considered the study of modern languages, devoting our attention chiefly to that of the French, which, on account of the greater extent to which it is spoken and the superior richness of its literature, demands the greatest attention.

We are now to commence with a different department of education, to begin a review of certain other branches of study, which, like those we have already examined, have an inimate relation to each other. Several of our next lectures will be devoted to modern and ancient geography, modern and ancient history, and mythology, between all of which there is a connexion more or less intimate. In these studies, although language ceases to be the immediate subject of our inquiry, we are still dependent upon it as a medium of communication.

We are now to consider the earth, with respect to its general and particular divisions; its features both of land and water; the races and nations of human beings who have dwelt upon its surface, with its various revolutions, civil, political and moral. As we ascend into antiquity, our lights become dim and uncertain, and carry us into the fabulous regions of mythology. Most of the ancient divinities are supposed to be distinguished persons, who, for their good or evil deeds, were immortalized by becoming objects of worship; the favor of some being implored, while the wrath of others was deprecated.

LECTURE XII.

Modern Geography.—Ancient Geography.

In pursuing the course at first marked out for our Saturday's lectures, I find the subject of intellectual improvement expanding so much before me, that it will be necessary to pass over in a more cursory manner than could be wished, the various branches of education which occupy the attention of the individual members of an institution, including pupils differing widely from each other in age and literary acquirements.

On account of this diversity, I sometimes feel an embarrassment respecting the style in which you should be addressed, and the kind of information most proper to

be communicated ; for in endeavoring to accommodate myself to the capacities of the more advanced pupils, there is danger that others may be uninterested and uninstructed ; while on the other hand, to address myself generally to the younger, and less understanding class of pupils, would be to discourage those who give tone and character to the institution, and for whose improvement it is more especially designed.

But it is not useless for the advanced pupil occasionally to look back to the elements of sciences which have become familiar, and to take general views of what has been passed in detail. When laboring to reach the summit of Mount Ida* you have not been as sensible of the actual appearances, and especially of the relative situations of the various streets and buildings which you passed, as when you could look down from a commanding height on those objects ; you then enjoyed the scenery as a whole, and saw the separate objects combining to form one beautiful scene. So it is in science, each separate principle and fact at first engages the attention, one difficulty arises as another is conquered, until the mind delights to pause in the ascent, and look down on the prospect beneath. It is thus that it becomes invigorated for new toils.

If younger pupils shall sometimes hear subjects discussed which they do not comprehend, it may serve to quicken their diligence to attain knowledge which they perceive to be familiar to others. It is well, too, for them, that their curiosity should be excited—well for them to perceive the many paths of knowledge which lie before them, and in exploring which, although there is labor, there is also an ample reward.

It was my intention to have given a sketch of the history, uses and applications of the different branches of female education ; but, as before remarked, in order that the literary department of our course shall not occupy a much greater space than its relative importance demands, it will be necessary to be more general than may be in-

* An eminence east of Troy, and a favorite walk of the pupils of the seminary.

teresting to you, or satisfactory to myself. I said the *relative importance*, for in comparison to the moral and religious formation of the youthful mind, literary attainments dwindle into insignificance.*

We will now proceed to notice the science of geography. On the importance of this study it is unnecessary to dwell, since it is usually a favorite pursuit with most young persons, and in most schools receives a large share of attention.

Great improvements within a few years have been made in the methods of teaching geography, and in the books used for that purpose. Twenty years since, the best works used were those of Dwight, Morse and Guthrie. Dwight's geography was in the form of question and answer; it was unaccompanied by an atlas or maps of any kind. Morse's first work, though superior to Dwight's contained no attempt at classifying facts in a philosophical manner; a pupil might study it diligently for months, and yet, for want of some connecting principle, the knowledge acquired would neither be useful or permanent. Guthrie's geography was a voluminous work, containing a great mass of matter, but equally unphilosophical in its arrangement as other cotemporaneous works.

It is within the last fifteen years, that the present method of teaching geography by maps, has been introduced. For some time after geographies were accompanied with atlases, no attempt was made to teach the drawing of maps, except in a laborious and unprofitable manner, which occupied weeks, and even months, with little other advantage than that of giving to the pupil neatness of execution. This method consisted of delineating maps upon paper, and coloring and printing them. These maps had a very pretty appear-

* It was the intention of the author when preparing these lectures for the press, to have included in one volume the different departments of education, as well as lectures on the duties of educated women in their various relations; but the literary department seemed to embrace too many subjects to be examined within the space at first allotted to it. The more important subjects which remain, the author proposes to include in a second volume.

ance, but, as they were often drawn by tracing on paper laid over the original; the mind of the pupil was usually too intent on the mechanical performance to think of the relative situation of places. A young lady, after spending three months at a boarding school, and having drawn and painted a map, was considered as well versed in geography, though in truth she might be almost as ignorant of the science as the unconscious material on whose surface her map had been delineated.

The system of teaching geography as, published by Mrs. Willard and Mr. Woodbridge, in their series of geographical works,* was introduced by the former into her school in Middlebury, Vermont, about the year 1816. She had no books which contained her plan, and taught her pupils from her own manuscripts. She made great use of maps in every recitation. The exercise of the pupil in drawing maps upon the black board is an improvement of still later date. You can all bear witness that this is a most effectual method of imprinting on the mind the contiguity and relative situations of countries. Another great improvement in teaching this science is that the pupil now commences with his own town and country, and proceeds from thence to distant places.

It seems, at this period, absurd to imagine a child receiving for his first lesson in geography, a description of

* Some years before the publication of these books, Mrs. Willard communicated to me her intention of preparing a geography on a new plan. She remarked that on the method then in use the principles of generalization seemed to be left out of the question; that instead of taking up each country singly, giving an account of its civilization, manufactures, state of education, religions, &c., these subjects should be treated of under separate heads, and thus comparison and generalization be made to aid the memory, while at the same time this method of arrangement would prove a useful discipline to those mental powers which were by its means called into operation. Mrs. W. remarked, that a work on such a plan would cause a new era in teaching the science of geography. I considered this at the time a bold assertion; but the general adoption of this method, the distinctive features of which are more fully developed in the *Universal Geography* so admirably executed by Mr. Woodbridge, establish its truth.

the solar system; for the next, a mathematical account of the divisions of the earth, and then of being carried to Africa, Europe, and Asia, before a word is said of his own country. We now reverse this method, and in Mrs. Willard's 'Geography for Beginners,' the teacher is directed to present the child with a map of his own town, to direct his attention to the river before his own door, to the mountains which are in sight, and the towns which bound his own native place.*

The word geography is derived from the Greek *ge*, the earth, and *grapho*, to delineate; but its primitive signification of a delineation of the earth has been gradually extended, so that now, geography includes a description of climates, soil and productions, and even of the moral and intellectual character of mankind.

The science of geography is intimately connected with astronomy; even our knowledge of the figure of the earth is derived from observing its shadow upon the moon, when in eclipse. An eclipse, as you well know, is caused by the shadow of the earth falling upon the moon; this shadow being always bounded by a *circular* line, proves that the body which caused it is round. In the early ages of mankind the earth was supposed to be a round flat surface, terminated by an immeasurable gulf. Each barbarous nation supposed itself in the centre of this great plain. Some supposed that the earth rested upon the back of an enormous elephant; and the elephant rested upon a huge tortoise; but here arose a greater difficulty than at first, since the whole was then to be supported by some new monster. You perceive how ridiculous are such hypotheses; but they are not more so than a thousand others which were received by mankind in their rude state.

* By teaching pupils in this simple manner, an instructor would have no cause to fear those blunders which are sometimes made by pupils when taught definitions before they are made to understand facts. A teacher, who had faithfully labored to prepare a class for examination, asked a young Miss who stood at the head, 'What is Geography?' The pupil, much to the entertainment of the audience and chagrin of her instructor, promptly and audibly answered, 'Geography is a large ball, or globe.'

By astronomy we learn the existence of what is called the *Solar System*, having for its centre the sun, around which revolve several worlds or planets: the earth we inhabit being the third in order from the sun, and travelling in a path called its *orbit*, around this great luminary, once, in a period of time, which we call a *year*. This journey causes summer and winter; for when the earth is in that part of its orbit where the sun shines directly upon it, we have summer, and when in that part where the sun's rays fall obliquely we have winter. Our days are longer in summer, and shorter in winter, from our change of situation with respect to the sun.

Although it is the real motion of the earth around the sun which causes the changes in their relative situations, yet to us, the sun is *apparently* approaching to, and receding from the earth. In March and September, the sun appears to be at the equator, and the days and nights are equal in all parts of the world.* After the 20th of March, the sun appears to advance towards us, and in June it appears at the tropic of Cancer, which is its northern boundary; after this it turns back and pursues its course towards the southern tropic, which it reaches in six months.

We learn by astronomy that the planets, and our earth among the number, turn as if upon an axis once in a given period of time. The earth turns completely round, in a period of time which we call a *day*. This day we divide into twenty-four parts, each of which we call an *hour*. But the term day is used in another sense, viz. to denote the presence of the sun, while its absence is called night. Thus when the earth, in its turning round, carries the side we are upon away from the sun, we have night; when we are carried towards the sun, we have day.

The division of the earth into zones is made with reference to the sun—those parts of the earth over which the sun is sometimes directly overhead are called the torrid or burning zone. In the temperate zones the sun is

* These periods are called the *equinoxes*, from *æquus*, equal, and *nox*, night; the night then being equal to the day.

never vertical, but the length of the days is not over twenty-four hours. The other two zones are the frigid; on these the sun shines very obliquely. They have days varying in length from twenty-four hours to six months. That department of geography which treats of the various circles supposed to be described on its surface, as parallels of latitude, meridians, &c., is called *mathematical geography*.

But we have not yet considered what supports the earth. Wonderful as it may seem the earth stands upon nothing; like the moon and sun it is suspended in the heavens without support. You know that even a little ball will not remain in the air without being supported by something: why does the ball fall to the ground? Why do all heavy bodies fall? We answer, that they are attracted to the earth by a force called *gravitation*. Now the earth, strange as it may seem, is kept from falling by the very power which causes a stone to fall.

The sun, by the force of gravitation, attracts the earth towards it; but the earth, when commencing its course, received from its Creator an impulse tending to carry it in a direction directly contrary to the sun: the force of gravitation tends as you see to carry it directly towards the sun; but the earth obeying neither force, though influenced by both, takes a middle course, and is thus kept moving round the sun. The connexion of the earth with the sun and other heavenly bodies is called *Astronomical Geography*.

Physical or Natural Geography is a very comprehensive science; it includes a knowledge of the materials of which the earth is composed. This knowledge embraces the science of *Geology*, which names and arranges the rocks and other materials which compose the earth; and of *Chemistry*, which teaches the constituent elements of these substances. Thus you see, that sciences which may appear distinct, have an intimate connexion with each other, since geology and chemistry are necessary to a complete knowledge of geography. Physical geography also comprehends a knowledge of those substances which grow out of the earth, and this knowledge is called *Botany*.

We will suppose ourselves to be seated in a balloon, sufficiently elevated above the surface of the earth to be able to distinguish its general figure and surface. Let us look first at its figure. We behold, suspended as it would seem in empty space, though in reality surrounded by the material substance *air*, a large ball, not exactly round, but a little flattened at each end or pole. This ball presents an uneven surface: while it is turning around from west to east, let us examine the various objects which appear. For this we must approach nearer. Here we see a long strip of land extending almost from one pole to the other; nearly in the centre it seems penetrated by an arm of the ocean: this must be the great American continent, separated by the Gulf of Mexico into a northern and southern part.

We will suppose that our balloon is somewhat lowered and directed over the northern part of this great continent; and what do we now see? On two sides are vast oceans, washing its eastern and western coasts, and on the north an ocean of ice separates it from the north pole. Do you observe that chain of lakes? These are called the *Great Lakes*, being the largest in the world. Let us approach nearer. Do you hear a sound like the rush of mighty waters? It is the thundering Niagara, which had poured forth its mass of waters, long before man had heard the roar of its cataract. But what becomes of this vast collection of water? It hurries onward, forming mighty rivers and lakes, until it becomes lost in the great ocean, which you see on the east.

But we must not, in the sublimity of this scene, forget that we have other observations to make. Let us direct our course towards the middle of this country, which we call North America. There, from the north, flows a majestic river, receiving in its course many noble streams; one, rapid and turbulent, bringing along mud and roots and trunks of trees torn up in its fury, comes foaming from the west; another, scarcely less rapid in its course, comes from the east: the parent river, embracing them both with many other tributary streams, bears them on to the southern gulf.

You see here an extensive country, through which the rivers descend from the north, from the east and west: this is called a *basin*, and many delightful valleys and plains does it contain; its sides on the west and east are the Rocky Mountains, and the Apalachian on the north, a high ridge which divides the waters that flow towards the northern ocean from those which run towards the southern gulf.

We will now go eastward, and pass that great chain of mountains which may well be called the *back bone* of our country. We are now on its eastern side. Look, and you will see many rivers flowing towards the eastern ocean. Do you observe the north-eastern part of the section of country we are now viewing? You may there see mountains with snow-covered tops; and farther west, another chain whose summits and sides are always verdant: between these mountains, pursuing a southern course, a river is seen whose progress at first seem hurried, but by degrees its youthful impetuosity subsides, and, with calm and placid motion, it bears itself on to an arm of the ocean, running in from the east, and forming the southern boundary to a lovely country. The valley of this river is adorned with the ornaments of art and the richest gifts of nature. This valley, and an extensive territory on the east and west of it are called New England, or the country of the pilgrims. History will tell you why these names are given.

But our aerial journey is becoming too long: we must retrace our way from the happy valley of the Connecticut. Let us go westward, and descend near to the earth—here we see our own Hudson, carrying on its bosom innumerable little objects, passing and repassing in rapid motion, as if actuated by a spirit of intelligence; but, although not gifted with intelligence themselves, they are directed in their course by intelligent minds, and filled with rational beings, intent on business or pleasure. These steam-boats exhibit one of the proudest victories which mind has ever achieved over matter; two destructive elements being made subservient to man's convenience, and obedient to his will.

We have now arrived at the place where the Hudson

river ceases to be navigable; and here, in a little flourishing city on its eastern bank, we will alight from our imaginary balloon, and close our voyage of discovery.

Such are some of the observations of physical geography; in order to understand it, you must in imagination combine at one view the great features of nature—oceans, lakes and rivers, continents and islands, tablelands, basins, plains, valleys, and deserts: these are all the subjects of this science.

The geological character of mountains, and the formation of countries are also to be noticed. When you know the geological features of a country, you can form a probable estimate of the character of its soil, the quantity of its water, and the number and appearance of its caves. You can tell whether it is likely to contain coal or salt mines, iron or precious metals, and even the plants which would probably be found in it. What is still more wonderful, you can form some judgment of the moral character of a people, from the nature of the soil. Switzerland is famous for its rugged soil, its pure air and water, and its patriotic and independent inhabitants. It is a *primitive* country, and such a formation requires *hard labor* for its cultivation. The effect of labor is to form the character of a people to habits of order and industry, and to render them independent of others: independence produces a nobleness and elevation of feeling, and courage to resist oppression.

A country having a secondary or alluvial formation, is generally fertile; nature almost spontaneously brings forth sustenance for its inhabitants. Not compelled to labor, and ignorant of intellectual enjoyments, man degenerates; he seeks only to gratify his senses, and easily becomes a slave to those who will protect and defend him. Slavery, in its turn, still further debases the wretched human being. The situation of the peasants of Turkey, of Spain and Italy, may illustrate the influence of a fertile soil upon the moral character of a people.

But I have, in remarking on national character, anticipated what belongs to *Civil* or *Political* Geography, whose province it is to describe the moral condition of

mankind, including their religion, forms of government, moral and intellectual improvement. This view of the world is sometimes called *Historical* geography.

You will now see that geography is not a science of *memory* alone, consisting of mechanical recitations of the names of places, and the situations of countries, rivers and mountains. It is necessary to learn to view things in detail, and then in general, to compare and reflect in order to become acquainted with geography. And thus you perceive, that although this science is highly useful for the information which it communicates, it also, when properly investigated, serves to develope and improve the faculties of reason and judgment, and elevate the moral character.

Besides Mathematical, Astronomical, Physical and Political geography there is another department of this science called *Statistical* geography, or that which gives an account of the length and breadth, population, boundaries and commerce of different countries.

The study of geography tends to give enlarged and comprehensive views respecting the earth we inhabit. While this science was unknown, and mankind in ignorance of the world on which they lived, the most dark and superstitious fears prevailed with respect to the living beings who were supposed to exist in certain unknown regions. Even the Romans, enlightened as they were for the period in which they flourished, supposed the hordes of barbarians who poured in upon them, were absolutely without limits, as to numbers, or in the extent of their country. Panic-struck by these terrors, the Romans thus became an easy prey to a people whom they thought it would be in vain to resist.

The descendants of the Romans, afterwards condemned the philosopher Galileo to perpetual imprisonment, for daring to assert that the earth was round, and moved on an imaginary axis. Spigelius, a bishop of Upsal in Sweden, was burnt at the stake, for expressing his belief in the globular form of the earth, and that there might be people who had night when it was day in Sweden, and day when it was night there, or that were

their *antipodes*.* This doctrine was by the superstitious and ignorant monks declared to be 'a proposition absurd in its very nature, false in philosophy, heretical in religion, and contrary to the holy Scriptures.'

The discovery of the true figure of the earth has been of incalculable advantage to mankind. Indeed, we cannot, without pity, think of the period when the European knew nothing of the earth, but of his own comparatively little continent. All else was dark and mysterious as the regions beyond the grave.

You have read of the difficulties encountered by Columbus in obtaining the assistance necessary to prosecute a voyage, in which he believed that some great discovery awaited him. We cannot, however, appreciate the feelings which agitated him, as hope and fear for the desired aid prevailed. By study and observation he had become convinced of the spherical figure of the earth, and at first only thought of finding a better way of sailing to the East Indies than by the long and dangerous passage around the Cape of Good Hope; but on further reflection, he thought a wise Creator would not have made the proportion of water so much greater than that of land, and therefore inferred the existence of another continent.

While his mind was laboring with these grand ideas, and impressed with the immense importance of ascertaining the correctness of his reasoning, he was, as is often the case with those who attempt great things, treated by many as a madman, or a fool. We may, my dear pupils, justly feel a pride in the thought, that a *woman was the first to comprehend the sublime conceptions of Columbus*; and providential indeed does it appear that this woman was a sovereign, able as well as willing to aid the genius which her mind appreciated. Isabella—let the daughters of Columbia ever hold thy name in reverence! let them remember that, without thy aid, their own dear country might even now have been a wilderness, shared by the savage heathen and the scarcely more savage beast of the forest!

* *Antipodes* is from two Greek words, *anti*, opposite, and *podos*, feet; meaning people who live on opposite sides of the globe, and whose feet are therefore directly opposite.

Ancient Geography.

Geography is properly divided into *Ancient* and *Modern*. Ancient geography commences with describing countries known in the remotest antiquity respecting which we have any information. Although writers agree in dividing both geography and history into ancient and modern, they differ as to the point of time most proper for their separation. While some fix this at the extinction of the western empire of the Romans, A. D. 476, others prefer to divide at the commencement of the *New Western Empire*, under Charlemagne, A. D. 800. A third period, and one which evidently seems the most proper, is the birth of our Saviour.

This is considered as having taken place 4004 years after the creation. The whole Christian world now reckon time from the birth of Christ: thus we date A. D. (*Anno Domini*, in the year of our Lord) 1831; that is, so many years have passed since his birth. So in public acts, officers of the government date from the independence of our country, it being at this time the fifty-seventh year of American Independence.

Should there be those eighteen hundred years hence who should dispute the fact of such an event as the revolution in which America became an independent nation, and at the same time should public acts continue to be dated from this event, would not this very circumstance substantiate the fact?

When did any people or any individual begin to date from an event which never took place? Were there no other proof of the appearance in the world of Jesus Christ, it would seem as if the fact of so great a portion of mankind reckoning from such an event might convince the most sceptical. Or, if he was nothing more than an obscure carpenter, who imposed on a few ignorant fishermen, until he was finally put to death for his blasphemies, how has it happened that his birth, after a period of more than 1800 years, is considered a more important event than the creation itself? Even the Deist, who ridicules the Christian for what he calls his credulity, dates from the birth of

Christ. Which, we would ask, is the more credulous, the sceptic who believes things can happen without a cause, or he who relies on evidence the most certain ?

The study of ancient geography is not to be commenced before some acquaintance with modern. After learning in the latter the situations and boundaries of places, it is not difficult to connect with them the names by which they were anciently known : thus Caledonia easily becomes associated with the more modern name Scotland, Hibernia with Ireland, Hispania with Spain, Gaul with France, &c. Ancient geography teaches how much the boundaries and extent of countries have changed and what part of the world was known or unknown to the ancients.*

A knowledge of Ancient geography is very important to a right understanding of the sacred writings, and Ancient History. The nations mentioned in the Old Testament have long since ceased to exist. Of the Assyrian, Babylonian, Egyptian and Syrian empires, nothing but the names now remains. Their proud capitals, Nineveh, Babylon, Thebes, Tyre and Sidon have disappeared from the earth, and scarcely do we know the places which they once so proudly occupied.

The cities of the Canaanites, the Midianites, and Philistines, with those of their conquerors, the Jews, are all swept from existence. The boundaries of these nations, ancient geography cannot well define; all that it can do, is to point out their supposed location. Of the people who inhabited these ancient countries, not a remnant remains, except of the Hebrews or Jews; and they wandering and dispersed over the face of the earth; though, still preserving their ancient customs and religion, prove the truth of the sacred volume, which, while it prophesied their fate as a nation, foretold that they would continue a separate people. A part of

* For further particulars respecting the proper method of pursuing this study, reference may be had to Mrs. Willard's Ancient Geography, which brings within a small compass most of the important facts of the science, and designates a philosophical mode of classifying and arranging them. Lavoisne's Ancient Atlas is very valuable for the advanced student, but is on a scale too large for schools.

the prophesy respecting them, viz. that they shall be collected and restored to their ancient city, Jerusalem, still remains to be fulfilled. The Christian world are looking for this event, as the commencement of the Millennium or that period, 'when the whole earth shall be covered with the knowledge of the Lord as the waters cover the sea.'

A knowledge of Ancient geography is of great assistance in understanding the historical parts of the New Testament. The events there recorded become more deeply impressed upon the mind when the location of the places where they occurred is understood. This science points out Bethlehem, where our Saviour was born; Nazareth, where he dwelt with his parents; the river Jordan, where he was baptized; the desert of Judea, where he fasted forty days; Cana, where he wrought his first miracle; the various countries over which he traveled; the lakes and seas which he crossed, and finally, Jerusalem, where he was crucified.

Ignorant of the situation of these places, it is impossible for a person to feel that interest in the narrative with which they are connected, that would otherwise be experienced. Suppose upon an ancient map you follow our Saviour in the various events of his life: you find the Mount of Olives, overlooking Jerusalem, where, beholding that city, he wept over it; here the garden of Gethsemane, where, being in agony under the burthen of our sins, he prayed; and there another mount, that of Calvary, where, the great work of our redemption being completed, 'the Saviour bowed his head and said, It is finished.' Does not the tracing of these locations help you to believe and realize the great truths of Christianity?

Without being accustomed to the assistance of sensible delineations, people are in danger of reading the historical parts of the Scriptures, as they would some tale of fancy, which, floating through the imagination, leaves upon the mind no lasting impression. Not that one cannot be a Christian without a knowledge of ancient geography, or indeed if ignorant of every human science; for blessed be the name of Him who has given us 'the word of life,' it is so simple that even 'the way-faring man

need not err therein.' The truths of Christianity appeal to the heart, not to the understanding, and are accessible to the most unenlightened. Religion, without science, is infinitely preferable to all knowledge without religion. But when religion and science meet in the same mind, both assume a higher character. Science may well be considered as the handmaid of piety; for it will ever be such, unless perverted and abused.

The physical department of Ancient geography varies but little from the modern in comparison with the changes in Civil geography. Yet even this does vary, and the very face of nature is changing. It is the business of Geology, a science which throws much light upon Ancient Physical geography, to trace the progress of creation, until the earth became a solid mass, fitted for the production of vegetable life and a habitation for man and beast. We learn that after this period, various agents have been, and still are, constantly producing changes in the features of our globe. Some operate slowly, as the *air*, which gradually dissolves solid substances, separating rocks into stones and crumbling these into pebbles and sand. This sand, by the water of rivers is washed towards their mouths, forming new land or deltas, or accumulating in the middle of rivers, and forming islands. Thus the higher parts of countries are gradually crumbling away, while the lower parts accumulate. Rivers are often blocked up by such accumulations, and their channels turned in new directions.

The region around us is probably much changed since the creation, or even since the flood, an event which produced a change in the physical aspect of the globe, greater than any other, or perhaps all others, which have ever occurred. It is impossible to pronounce with certainty, respecting the changes which may have taken place in the region watered by the Hudson and its branches; but while passing down its current and observing the adjacent country on each side, I have been strongly impressed with the belief that the valley of this river was once a vast lake connected with the lakes on our northern border; that the highlands and pallsadoes were the southern boundary of this lake. The waters

forcibly operating upon these barriers, might by degrees have worn them away, until, opening for itself a passage, this mighty mass rushed onward to the ocean. This however is mere hypothesis, which should never be confounded with demonstrated theories. Each one of you has a right to make her own suppositions, and to decide upon the probability of the event which has been suggested. If the region about us has once been covered with water, it seems probable that Mount Ida and Mount Olympus were islands in this great lake.

About two miles from this city, on the east, there is a beautiful valley ; by following its course, you will find it winding its way towards the Hudson, resembling in appearance the bed of a river whose channel has been turned, or whose waters are dried up.

On the west side of the Hudson there is a singular ravine, often called the dry river ; this, instead of the sloping banks of the beautiful vale on the eastern side, has abrupt and ragged shores, and a rocky, uneven bed : a little rill yet lingers among the rocks, convincing us, if further evidence were needed, that here has been a noble arm of the Hudson. Although on the eastern side, the vale of which I have spoken, bears less incontestible marks of its having been the bed of a river, I have little doubt but that too was covered with water tributary to the large river. Referring then to the supposition that the Hudson river is but the remains of a great lake, which suddenly discharged its waters into the Atlantic, we might suppose that when this event took place, many rivers were formed by the inequalities of the surface ; that these rivers in time have changed their channels, or gradually subsided into dry land.

These hints are offered with a view to induce you to pay more attention to the natural features of the different places where you reside or through which you may travel ; to remark the indications of changes in physical geography, which will present themselves, when journeying through any region of country. Even scenes most familiar to you may never have been viewed in reference to any investigation respecting the causes of the appearances which present themselves : by bestowing a little attention

to these subjects, nature will appear in a new aspect and you will almost begin to fancy that you have hitherto walked blind-folded through her curious and wonderful scenes.

Although in many cases we merely infer changes in the physical character of countries from certain indications, yet we learn from history, of cities being sunk by earthquakes or overwhelmed by the lava of volcanoes, of islands suddenly sinking into the earth, and of other islands being thrown up from the bottom of the sea.

But have you yet studied the Ancient Geography of your own country?—We have said that geography should begin at home; why then have none of you been taught the Ancient Geography of the United States?—It is because we have no ancient geography. We are not only a new nation, but the country we inhabit is new;—not of a newer creation than that which we call the old world, but until it was discovered in 1492, it had been inhabited by a race of men, who, ignorant of the arts of printing or writing, left no records of what they or their country once were. Our ancestors a little more than two hundred years since came to this newly discovered country; they found here a savage people, who knew nothing of the arts and refinements of civilized life; who had no history, no ancient or modern geography of their country. They told our ancestors what their fathers had said to them, of their coming from the far west towards the east. But tradition points out no ancient cities like those which from time to time have flourished in the old world.

The most ancient towns in New-England are Plymouth, Boston, Hartford, and New-Haven; in the Middle States, New-York and Albany; and in the Southern States, Jamestown and Savannah. These are however young and mostly flourishing. Antiquity has not yet shrouded any of our cities or heroes in the obscurity and indistinctness necessary to the sublime. Our Washington is remembered by many who now live, and who knew him to be but a man, though a great and good one. Had he lived in ancient days, his memory would have received divine honors: he would have been enrolled among

the demi-gods, with Perseus, Hercules, Æsculapius, and other heroes and benefactors of mankind.

The study of ancient geography, in bringing you acquainted with places no longer in existence, cannot fail to suggest the transient nature of all human glory and perfection. The works of man are all perishable; and yet these are more enduring than their authors.

To toil a few short years, and then pass away, is the destiny of man, as regards this world; but the most momentous consequences depend on these few years; even the eternal destiny of the immortal soul. Could we penetrate the unseen world of spirits, as we can in some degree the dim twilight of antiquity, we should behold the effects of the short period of earthly existence upon our fellow mortals who have gone before us; for the scriptures affirm, that 'their works follow them.'

This consideration should then give new vigor to our efforts;—true, marble palaces and temples, and all the works of art crumble into ruins, yet the moral deeds of mankind, though it may seem that they too are carried down the mighty stream of time, are arrested in their progress, recorded in that awful register of human actions which is to remain sealed till the 'great day of accounts.' Who among us will not have a fearful list of omissions of duty, of commissions of offences to answer for? Not a single human being is without sin, not one is guiltless. And yet we read in the word of God, that without holiness no man shall see the Lord. What then, shall we do? are we to be forever lost, shut out from his presence, who alone can make us glorious and happy? Where shall we obtain the holiness that we need? Where shall we wash away the guilt with which our souls are stained?

Listen, my dear pupils, to the words of the book of life. 'The blood of Christ cleanseth from all sin. He was wounded for our transgressions, he was bruised for our iniquities, with his stripes we are healed. His blood is shed for the remission of sins. If we confess our sins he is faithful and just to forgive us our sins, and cleanse us from all unrighteousness.'

LECTURE XIII.

History.

HAVING acquired some knowledge of geography, the mind naturally seeks for information respecting the living and moral agents, who have inhabited the earth since the period of its creation. There are two methods of studying history; first by commencing with the earliest periods of society, and descending to the present time; or second, an inverse or ascending order.

Which of these methods is that of nature? Does the child feel most interested in hearing accounts of what befel his grandparents, or in learning the fortunes of Alexander or Cæsar? We know that he will take a deeper interest in the history of his own ancestors, and of events which have had an important influence upon his own circumstances in life. Proceeding then upon this view of the operations of the mind, we would recommend that the beginner should commence with the history of his own age and country. It would be desirable that every child should first be presented with the history of his own town, then of his own state, and after, that of the whole United Republic. This method has but recently been the subject of discussion among those who have the charge of youth; and with the books now before the public, it is not easy to conduct a course of history in the manner above suggested. In this institution we have only partially adopted it; as Mrs. Willard's American History is too large for younger pupils, we still continue to give them the former course, viz. ancient history first, then modern, closing their historical studies with the American History.* This method is agreeable to the order of time; indeed when a pupil commences with his own age, and country, and ascends in the course of time, he should, at the last pursue the descending course,

* The publication of the Abridgment of this History since this lecture was written, has obviated the objection above made, viz. the want of a suitable work for beginners on the new plan.

as in this way can be taken a more philosophical view of the connexion between causes and their corresponding effects.

The term history is derived from the Latin word *historia*, and literally signifies a relation of facts; thus we term that science which considers facts with respect to the objects of the different kingdoms of nature, animal, vegetable and mineral, *Natural History*.

We are now to confine our attention to *Civil History*, or that branch which presents us with a record of the characters and actions of mankind. Cicero defines civil history to be '*the testimony of time, the light of truth, the messenger of antiquity, and the school of life.*' History is a word of extensive application, but when used to signify a particular branch of education it has relation to the origin, progress and decline of nations, to the distinguished individuals who have exerted an influence upon the public welfare; and to the progress of literature, science and arts. History is indeed something more than a knowledge of facts; it leads to a consideration of those principles in human nature which give their origin to the various forms of society, from which spring the institutions, laws, and usages of man in his rudest as well as most polished state. History teaches the principles on which nations are founded, and points out the means of improvement, as well as the causes of their depravity and decline.

But it is the mind matured and practised to judge of causes by effects, that must consider history under its true philosophical aspect; by the young pupil it must be chiefly viewed in relation to events.

Civil history is either *sacred* or *profane*. Sacred history is that which is contained in the bible. To this holy volume we are indebted for our knowledge of the origin of our planet.

'In the *beginning* God created the heaven and the earth.' When was this beginning?—This is a fearful and overwhelming question, carrying the mind back to that period when the Deity existed alone in the majesty of his own glory, and the vast conception of his infinite mind had not yet become manifest in material creations.

But matter must have had a beginning;—it could not have created itself;—God must have existed forever, for he is the first cause of all things, and there is none greater than himself. Nothing can be brought into existence without a cause; what then could have created God? We see that should we attempt to go further, and find some power which could have created the Deity, we must go another step, and ask how that power came to exist, and thus we might go on *ad infinitum*; not in any manner removing the difficulty, but multiplying mysteries at every proposition. This is what the Pagans did in their mythology. For although they called Jupiter the father of gods and men; they accounted for his existence, by saying that he was the son of Saturn; Saturn was the son of Heaven and Earth, who were the children of Chaos. How Chaos or matter, in an unformed state, came into existence, the Pagans, in their wisdom, did not attempt to explain.

But let us turn from the childish absurdities of heathenism to the light of revelation. 'In the beginning God made the heaven and the earth.' God then has existed from eternity; 'he is from everlasting to everlasting, without beginning of days or end of time.' Here I would ask you for a moment to consider the language of the sacred history;—was this *beginning*, the period when our earth began to take its present form? This is the belief of many, especially of those who are little acquainted with geological facts, and who have not paid strict attention to the import of the language.

The opinion of others is that the '*beginning*,' was that eventful period, when the elements of all the matter which now exists in the universe were brought into existence. Respecting what took place after this august beginning of material existence, except as relates to our earth, the sacred writings do not inform us. The history of other worlds is not known to us; nor for how many centuries of ages they might have been going on to perfection, before the Almighty thought proper to shape into its present form the matter which composes our globe. It seems probable that between the fact recorded in the first verse of Genesis, and that in the succeeding verse, a vast

interval of time had elapsed. But the sacred historian leaves that period as not relating to man, and hastens to speak of the earth. This, he says, 'was without *form*, and it was void, (or a chaotic mass) and darkness was upon the face of the deep, and the *Spirit of God* moved upon the face of the *waters*.' It appears that this formless mass was in a fluid state; and geology furnishes abundant evidence to prove that from such a state our globe must gradually have become consolidated.

The spirit or power of God now operating upon this chaotic mass, from darkness produced light, and a series of changes at length brought the earth into a habitable state. Man was then formed, not of matter created newly for that purpose; but his body was made of the dust of the earth, and animated by the breath of the Almighty.

In the history we are now examining, we thus learn the production of our earth, and the origin of the human race. We find Adam and his companion, placed in the delightful garden of Eden, favored with the company of angels, and personal communion with God himself. But yielding to temptation, our first parents disobeyed the commands of their Maker, and thus 'brought death into the world and all our wo.' Here we see the *origin of evil*; a subject, about which metaphysicians have been much perplexed. For the same ambition which led our first parents to sin, still urges their descendants, to study into things transcending their own limited faculties, and to pass by those simple records which the Almighty himself has caused to be written for their instruction.

Let us now take a rapid review of the records of our race after sin had entered the world. A brother, urged by envy raises his hand against an innocent brother, and for the first time death appears among men. Cain is driven forth a vagabond upon the face of the earth. It appears that he built a city called Enoch, after the name of his son; this city was probably nothing more than a collection of his descendants into one place, where they inhabited rude and temporary dwellings.

Although some 'walked with God,' yet there were

many who followed their own evil devices, until wickedness had so much increased upon the earth, that the Almighty resolved upon the destruction of the whole human race by a deluge. Noah and his family alone were spared, by taking refuge according to divine counsel, in an ark, constructed in a peculiar manner. The deluge is supposed to have taken place about 1600 years after the creation. The earth was re-peopled by the three sons of Noah. Before the flood mankind lived to the age of several hundred years; after this time the period of human life gradually shortened to seventy or eighty.

The scene of the great events which we have now so hastily sketched, was in Asia. The place where was situated the garden of Eden is not known; for after the fall, its beauty and loveliness disappeared, thorns and thistles sprung up, and man was obliged to gain his subsistence by the sweat of his brow.

No records except the sacred writings give us any knowledge of the history of man previous to the period of the deluge. These writings were carefully preserved by the Jews. They were the descendants of Abraham, a man especially consecrated by God as the father of a chosen race. Moses, the author of the five first books of the Bible, or of the pentateuch as they are sometimes called, is the most ancient historian of whom we have any knowledge. Sacred history, after the deluge is mostly confined to the Jewish nation.

Profane history is so called in contradistinction to sacred. Of profane historians, the most ancient is Homer; but his relations are so mingled with fiction, that his feeble light serves but to manifest the thick darkness of the period in which he lived. His poems chiefly relate to Greece and the coasts of Asia Minor, the Trojan war, and the exploits of Grecian and Trojan heroes.

The first writer of profane history who can be relied upon is Herodotus, who wrote after the invasion of Greece by Xerxes; Thucydides and Xenophon appeared soon after, and these three writers may be considered as the fathers of Grecian history. At this period, eloquence was the idol of the Grecian people; and as

their historians read their own works in popular assemblies, they sought rather to adorn them with the beauties of style than to give a dry narrative of facts: their writings were but a kind of historical romance, in which their own countrymen figured as heroes, and their own country was extolled with all the enthusiasm of the most glowing imagination. They were the Scotts and Coppers of ancient days.

The Roman historians, Polybius, Tacitus and Sallust were more philosophical and dispassionate. Livy was richer in the ornament of language, but less correct. Cæsar wrote chiefly of his own wars, and described military operations in a more vivid and distinct manner than any succeeding writer has done. Had Napoleon Bonaparte written the history of his own campaigns, he would probably have equalled Julius Cæsar in conciseness and vividness of language as he did in military skill and unbounded ambition.

As we descend to more modern times we meet in French with the writings of Bossuet, Voltaire, &c. Among English writers, Hume, Robertson and Gibbon are conspicuous.

Our own country, young in its literature, already possesses historians of acknowledged merit. To trace our history, from the little band of pilgrims who first landed on Plymouth rock, through the trials of our forefathers by savage cruelty, famine and pestilence, and to follow the patriots of the revolution through their struggle for independence, are employments which have warmed the heart and engaged the pen of many a gifted American.

But what, let me ask is the advantage of studying history? Is it necessary only that your minds should be stored with a mass of facts? that you should know that in such a year the pilgrims landed, that in such a year commenced, and in such a year ended the revolutionary war? All knowledge to be useful must have its practical application. In the character of the New-England fathers we see many noble examples of heroism amidst dangers and discouragements. In American history we see many of our own sex leaving their native country, and the elegancies of refined society, that they may, in a savage

wilderness across the distant ocean find a 'Faith's pure shrine, and freedom to worship God.' From such examples we should derive important moral lessons;—from the conduct of those who have preceded us, we can gain that most important knowledge, the knowledge of human nature, of ourselves.

From whence come wars and fightings? Come they not from the evil passions of men? But none of you are heroes or conquerors, who would wade through blood to reach a throne, or post of honor! True, but have none of you, some darling object in the attainment of which, you would trample on the feelings, or wound the hearts of your companions. Do you never wage the war of tongues, which often sting like adders, and poison the peace of a fellow being? When you read in history the fate of the ambitious and contentious, you should learn from this, that they who sow the seeds of strife reap the fruit of bitterness.

The chain of historical knowledge is by no means an unbroken one. There have always been many nations, ignorant of written language; and the historical records of antiquity are far from being all known to us. The histories of the eastern or oriental nations, Egyptians, Syrians, Chaldeans and Persians have mostly perished. The Greek and Roman histories, and the holy scriptures, contain all the authentic accounts of a period anterior to the foundation of Rome. The Roman history is the only one which throws light upon a period of nearly five hundred years after Christ. After the fall of the empire of the west, the kingdoms of Spain, France, Italy and England, have each its particular history; and about this time commence the histories of Germany, Hungary, Sweden and Denmark.

Respecting the countries now Mahometan, Egypt, Syria, Persia, and the northern part of Africa, we know little of their history for the last thousand years. The Chinese history is chiefly a collection of fables and absurd traditions. Of the American Indians we have no authentic history beyond the time of the discovery of the western continent. We see how little then is known of the whole actual extent of the globe during the course of

ages which have passed since the creation. Yet there are histories without number, but it is only by a careful selection and perusal of the best authors, that much advantage can be derived from them. In early youth, history interests the mind chiefly on account of the pleasure derived from narrative. As the pupil advances in life, history ought to be regarded under a new aspect, and studied both for the sake of gaining information and forming the mind to habits of discrimination and reflection. One who reads history merely for amusement, or who loads the memory with facts, without regard to their importance, or examination of their causes, may read much, and yet neither know men, manners, laws, arts and sciences, neither the past or the present world, nor the relations which they bear to each other.

A modern French writer* on education advises the student in history to make use of books of extracts, in which facts and principles may be noted in a definite and systematic order. By this means, the student will, in process of time, possess a collection of practical truths, and of illustrations of principle, arranged in order and furnishing instruction at once solid, diversified and complete. The following are some of the subjects proposed for heads or titles of the *historical common place book*.

1. *Education, or the art of forming the character of man.* Collect and class as far as possible, by age and by nation, the laws, customs, and facts relative to public or private education, in different ages and among different people.

2. *Politics or the art of rendering a people happy.* Collect the facts, observations, laws, customs, and manners which appear to have had an influence upon this subject.

3. *Women—Their influence considered among all people and in all ages.* Collect the facts, observations, anecdotes, portraits of characters; in short, anything which has had an influence, and still has a bearing upon the condition of females. Point out the effects, salutary or

* M. Julien, now Editor of the '*Revue Encyclopedique*,' one of the first literary journals in France.

otherwise, which different modes of religion, education, state of society and manners have had upon the condition and character of women, and, through them, upon the whole human race.

4. *Comparison of great men.* Arrange according to age, nation and rank the distinguished persons of history. Describe their characters, the qualities for which they were distinguished, the points of resemblance between them, the nature and degrees of influence exercised by them upon the age in which they live, their profession, and their country.

5. *Religion.* Study in different ages of the world, and among all nations, the different characters of religious belief and institutions, their influence upon human character and happiness, the means employed for their support, and the effects produced by them upon society at large.

This manner of reading, studying, analyzing, and generalizing, will have an important influence in forming the judgment, strengthening the memory, and giving enlarged and correct views of persons and actions, with habits of careful observation, and of impartial comparison.

The method above delineated is particularly recommended for your private reading, especially when you shall have left school, and can no longer have the advantage of hearing observations and explanations on the subjects of your study. The same method might be followed with equal advantage in the pursuit of other branches of knowledge as well as history. It would be advisable for every young lady, after leaving school, to commence a systematic course of historical reading. During the progress of school education, not more than an outline of general history can be given. This outline, however, will be of great importance in subsequent reading. A good system of chronology, or classification of events in the order of time, cannot be too early learned: with this, and an outline of general history, the facts afterwards gained will naturally arrange themselves under their respective epochas. On the contrary, without a systematic arrangement of historical facts, reading will be of little use.

Parents sometimes say they are indifferent as to having their children study history at school, as they can read it at home. But history ought to be *studied*, in order that it may be afterwards *read* to advantage. It should early be associated with geography; and maps should be drawn and used at each day's recitation. As I intend hereafter to give you my ideas on the subject of a choice of books for reading after you have left school,* I shall not at this time enter minutely into the consideration of a course of historical reading.

After becoming acquainted with Scripture History, it would be well to read Josephus's Jewish Antiquities, and Rollin's Ancient History.

By the assistance of these works and the use of ancient maps, you will acquire correct and extensive views of ancient history. Plutarch's Lives of the illustrious men of antiquity, is a work highly interesting as well as useful. It not only gives the history of great men as they appeared in public and political life, but shows their private and domestic characters, and unfolds their secret sentiments and springs of action. When contemplating the characters of the great and good, we feel the influence and utility of that principle of our nature which Lord Kames has happily called the *sympathetic emotion*. We are seized with the desire of imitating and resembling what we admire. Were this sympathetic emotion always confined to virtue, the influence of bad examples would be less hurtful to society; but unhappily, every thing which the young mind admires, it is prone to imitate.

A daring, and audacious courage always finds admirers; and that ambition which would wade through blood to reach a distinguished post, seems grand and heroic. It is however very important that the young should learn to look on actions and motives as stripped of their dazzling accompaniments; then will virtue and greatness alone, excite the sympathetic emotion which prompts the desire of imitating. Then will the character

* This subject will be treated of in the second volume of the Lectures.

of the just and benevolent Trojan appear far more lovely and desirable than that of the aspiring and ambitious Cæsar, and the grasping selfishness of Buonaparte sink before the generous magnanimity of a Washington.

The *Travels of Anacharsis the Younger* is a work of much merit. The author is the Abbe Barthelemy; he who assumes the name of Anacharsis after the Scythian sage of that name, who was ranked with Thales, Solon, and others, termed the seven wise men of Greece.

Barthelemy, under the name of Anacharsis, supposes himself to be travelling in Greece at the time of Philip of Macedon, and during the youth of his son Alexander the Great; yet as the historical events related and the facts given are all in strict accordance with the truth, he is thus enabled to present a lively picture of the events of that period. He carries his history back to the earliest periods of Greece. He lays before us the laws, form of government, customs, religion, and domestic life of the various people who composed the confederation of the Grecian republic: he explains their mythology, gives the characters and opinions of their philosophers, describes their poetry and improvements, in the arts of painting, music, and sculpture. You seem to be transported to Greece in the days of her glory, and to see before you her beautiful works of art, to hear the thundering eloquence of her orators, the majestic numbers of her poets, and the wisdom of her sages. After this work should follow some good history of the rise, progress, and decay of the Roman empire. The Roman historians you will read in pursuing your classical studies, but it is not to be expected that many of you will become sufficiently familiar with their original language to read it with facility. Gibbon's *Rise and Fall of the Roman Empire* is well written, and were it not for the hostility to the christian religion which occasionally soils his otherwise beautiful pages, it might be recommended;—indeed, as it is, there is little danger that any one educated and settled in a religious faith should be otherwise affected by his occasional sneers, than with pity for the mind which could thus blind itself to what is most glorious of all the works of Almighty benevolence.

Vertot's Roman Revolution gives an interesting account of the origin, manners and customs of that republic; it exhibits the political agitations to which these people were subject, with their effect in changing and modifying their government.

The history of the middle ages is well given by Condillac. Accustomed to reason with metaphysical accuracy, this philosopher was well qualified for a historian, whose duty it is to trace effects to their cause. He explains the origin of the feudal power or authority of the barons; the causes which produced the institutions and enthusiasm of chivalry, and its influence upon the manners, morals and religion of those days. He shows the causes which retarded the progress of science during that dark period, when almost all the learning was in the hands of superstitious monks, and enthusiastic alchemists, and gives a clear and interesting account of the revival of learning in the fifteenth century.

Although history is usually divided into Ancient and Modern, it seems very proper to consider that of the middle or dark ages under one point of view. Middle History is considered as including that portion of time which intervened between the destruction of the western empire in the year 700, and the revival of letters at the discovery of America in the fifteenth century.

Modern Histories are numerous. Among the most useful are Hume's England, Robertson's Charles V., Voltaire's Charles XII., Milot's France, Raynal's Political and Philosophical History of the Indies, Bigland's View of the World, Marshall's Washington, and Pitkin's and Willard's United States.

There is one view in which history appears peculiarly interesting to females; it is with respect to the gradual changes which have taken place in the condition of their own sex.

In the garden of Eden, woman was cherished as the tender friend and intelligent companion of man. We have reason to believe this, both from the language of the Scripture, 'She is bone of my bone, and flesh of my flesh,' and from the perfect condition of man at that period.

For in order that society should exist in its perfect state, woman must hold that rank and exercise that influence for which God designed her. But alas! woman was frail, she listened to the voice of flattery, disobeyed the command of God, and influenced her companion to become an accomplice in guilt. From that time, she was degraded, and long ages saw her a servile being, counted with his flocks and herds as the property of man.

At length light dawns upon the condition of this poor, abject being, whose spirit had been bent and broken by servitude. The voice of pardoning mercy says, 'Woman go and sin no more.' The Saviour of the world looks with pity upon the suffering being, who clings to him as her friend and heavenly benefactor: she follows him with the constancy of her nature, through evil report and good report; is last at his burial, and first at his resurrection.

Since those glorious events, our sex have been honored wherever the name of the Redeemer is worshipped. Many like Lois and Eunice, the grandmother and mother of Timothy, bishop of Ephesus, have been the honored instruments of promoting the cause of true religion, and their praise has been heard in the churches.

LECTURE XIV.

Mythology.

THE study of Mythology, which formerly held a high rank in the education of both sexes, especially in Europe, has been superseded by more valuable sciences. It now appears absurd to introduce to the young mind the disgusting fables of ancient heathenism. Nothing can be more injurious in its tendency, upon the glowing imagination of youth, than many of the stories connected with the Grecian Mythology; and yet they are so interwoven with ancient classical literature, and so frequently alluded to by modern writers, especially some of the best English po-

ets, that an acquaintance with these fictions seems necessary to those who aim at a knowledge of general literature. It becomes then important that mythology should be purified of its grossness as far as possible, before a knowledge of it is communicated to the young.*

The term mythology is derived from the Greek *muthos*, fable, and *logos*, knowledge. It is a science which treats of the fabulous opinions and doctrines of the ancients respecting the deities, which they supposed presided over the world, or influenced its affairs. The arts of painting and sculpture have done much to immortalize the Grecian mythology. Some of the noblest specimens of ancient arts are to be seen in the embodying of mythological fable; as the famous statues of the Venus de Medici, Apollo, Belvidere, &c. Architecture has also lent its aid to perpetuate this false and absurd religion. Marble temples of the most exquisite workmanship and the most beautiful proportions, were erected in honor of the gods and goddesses. At Ephesus was the famous temple of Diana, at Athens that of Olympian Jove, and at Delphos, that of Apollo. Within each temple was placed a statue of the deity, and before this the priest offered sacrifice.

The Athenians becoming tired of these idle ceremonies, and losing all faith in their idols, at length erected an altar to the '*Unknown God*.' Paul seizing upon this indication of a willingness to be taught a better faith, declared to them ' *Whom therefore ye ignorantly worship, Him declare I unto you.*'

I will now attempt to give a brief sketch of the system of Mythology as taught by the Grecians, and with some modifications received by the Romans.

1. *The origin of the gods, and the celestial deities.* Referring to the beginning of all things, mythology supposes there was a time when only *Chaos* and *Night* existed; they were the parents of Earth, who was the mother and wife of Uranus (or Heaven.) From Earth springs the hundred-

* A translation of Moritz's Mythology, published by the Messrs. Carvill, of New York, is probably one of the best books for the young pupil which can be found on this subject in the English language.

armed giants, Cottus, Gyges and Briareus, the huge, one-eyed Cyclops, *Brontes, Steropes and Arges*. The gigantic Titans, Oceanus, the Titanides (or female Titans) are all the children of Earth. Saturn, the youngest of the Titans marries Rhea, and from them descend Jupiter, Vesta, Ceres, Neptune, Juno, and Pluto. Jupiter, assisted by the Cyclops, who prepare his thunderbolts, declares war against Saturn and his brethren the Titans.

The modern gods, or the descendants of Saturn and Rhea, now become distinct from the Titans, or ancient deities. War ensues between the two parties. After a conflict of ten years, Jupiter, by obtaining the assistance of the hundred armed giants, becomes victorious, and hurls his enemies into the gulf of Tartarus.

The ancient realm of the Titans is now divided among the three victorious sons of Saturn. Jupiter takes the government of the heavens and earth, Neptune of the seas, and Pluto of the infernal regions. The hundred armed giants are appointed to guard the entrance into Tartarus, the prison of the Titans.

Earth, indignant at the treatment of her children, the Titans, brings forth a new race to be their avengers; these are the giants, who wage war anew upon Jupiter. The giants being subdued, Typhon, another child of Earth, and Tartarus appears. The upper part of the monster's body was covered with impenetrable feathers, and the lower parts enveloped in the folds of horrible serpents. This formidable enemy is at length conquered and secured under mount Etna. After this, two sons of Neptune, of immense strength and size of body, attempted to scale the heavens, by piling mountains on mountains, placing upon Olympus, Ossa, and upon Ossa, Pelion; Apollo defeats this bold design by destroying the rebels with his arrows. Saturn, after his defeat, is said to have fled to Latium, where under his reign peace and justice flourished, and the earth spontaneously brought forth her increase, this was called the *golden age*. This account of Saturn is founded upon the supposed fact, that a king of Latium built, near the Tiber upon the hills, where Rome was afterwards founded, a city called Saturnia. Saturn is represented upon ancient medallions,

with a scythe in his hand ; he is a symbol of time which destroys all things, as he destroyed even his own children.

Prometheus, a son of one of the Titans, amusing himself in fashioning a figure after the image of the gods, is suddenly seized with the desire to perfect his work by giving it life and animation. Accordingly he steals from heaven a spark of the sacred fire, by means of which the inert mass becomes endued with warmth and intelligence ; this image he called *man*. Jupiter, resenting this infringement of his own creating power, orders Prometheus to be fastened to a rock, with a vulture feeding upon his bowels, which as fast as they were consumed continued to grow, so that he could have no hope that his torments would ever end. Pandora is sent by Jupiter to present mortals with a box, containing all the miseries to which human life has since been subject. Hope at the same time was given, to save them from despair. Jupiter, resolving to destroy the race of men, sends upon the earth a deluge, which overwhelmed all but two persons, Ducalion and Pyrrha. Hercules afterwards reconciled Jupiter to Prometheus, and, killing the vulture, delivered him from his agonies.

We see even that heathenism itself had borrowed light from the sacred oracles. The wars of Jupiter with the Titans and the giants, and their confinement in Tartarus, are analogous to the scripture account of the war against the fallen angels, and their expulsion to the regions of darkness. The deluge of the heathens seem evidently to refer to the flood which God brought upon the earth for its wickedness ; and Ducalion appears to be but another name for Noah. Hercules, who was the saviour of the world, delivering it from monsters, who had power over its inhabitants, seems to be an imperfect and depraved conception of that Saviour who was afterwards to limit the power of Satan upon earth, to save man from the agonies of the vulture sin, which had so long preyed upon his heart, and to reconcile him to an Almighty Sovereign. And yet these representations, analogous in some respects to facts communicated in the Scriptures, are so obscured by gross and palpable

fictions, that we scarce know whether most to pity or despise those who invented and believed them.

Jupiter is called the father of gods and king of men ; he is sometimes termed Jupiter Olympus, from the mountain on which he was supposed to hold council with the gods.* The top of Olympus was supposed to rise far above the clouds, into a region of pure ether ; here the gods sipped nectar, and enjoyed the music of Apollo's lyre, or conversed upon, and determined the destinies of mortals. Jupiter Ammon was worshipped in Lybia. He is also called Jove, and is generally represented in antique gems, as seated upon a throne, holding a sceptre in his left hand, and the thunder-bolts in his right, with an eagle at his feet. Juno, the queen of heaven, the sister and wife of Jupiter, is represented in ancient sculpture as seated in a chariot drawn by peacocks, or sitting upon the eagle of Jupiter, having in one hand a sceptre, and with the other hand holding a veil spangled with stars, which floats over her head. The character of Juno has ever had too many prototypes among our sex ; beauty often inspires its possessor with the desire of power which destroys that softness and delicacy that ensure permanent affection. Scornful and imperious Juno may excite admiration, but love can be felt only for a character in which there is something gentle and tender ; thus Venus, with downcast looks and tearful eyes, appears more lovely than she, ' who walked a goddess, and who moved a queen.'

Stung with jealousy by the preference which Paris, a Trojan prince, gave to the beauty of Venus, Juno instigates the Grecian states to make war upon Troy ; after a ten years siege accomplishes the destruction of that city, and the hated race of Priam, father of Paris. But Trojan Æneas, the son of Venus and Anchises, escapes with the remnant of his companions, and, after suffering various ills ' by sea and land on account of the

* '*Panditur interea domus omnipotentis Olympi,
Conciliamque vocat Divum pater atque hominum rex.*'--VIRGIL.

Meanwhile the palace of all-powerful Olympus is opened, and the father of the gods and king of men summons a council.

merciless anger of cruel Juno,* he arrives in Italy and lays the foundation of the Roman empire.† Even sullen Juno,‡ who through jealousy, had kept the heavens and earth and sea in a tumult, is at last appeased and becomes the friend of the Romans.

Venus, the goddess of love and beauty, is sometimes considered as having sprung from the foam of the sea, and called Aphrodite; but among the modern deities, she is a daughter of Jupiter and Dione. In the character of Venus, we see beauty and softness, without wisdom or force. Although aware of the dreadful ruin which would fall upon the Trojans, in consequence of the misdeeds of Paris, yet so much did she value her reputation for beauty, that in order to secure his decision in her favor, she promised him for a wife the fairest woman upon earth, Helen, wife of Menelaus, king of Sparta. Beauty has ever been the cause of much suffering and folly, and will continue to be so, until females shall learn to consider it as subordinate to wisdom, and to be cautious lest they sacrifice the nobler aspirations of the heart to the pride of external charms.

Venus, attended by the graces and her son Cupid, is represented as seated in a chariot drawn by doves. The famous statue of this goddess, called the Venus de Medici, proves the perfection to which the ancients carried the art of sculpture. Temples to Venus were erected in Paphos, Cytherea and Lydia.

Minerva, the goddess of wisdom sprung forth in complete armor, from the head of Jupiter. Not being the offspring of woman, she is represented as devoid of female tenderness, and the softer qualities of the sex. While the intellectual powers are, in her character, exhibited in their greatest perfection, the emotions seem to form but a small part of her mental constitution. She conducted

* *'Saevae memorem Junonis ob iram.'*

† *'Genus unde Latinum,
Albanique patres, atque altæ moenia Romæ.'*

From whence the Latin race,
The Alban fathers, and the walls of lofty Rome.

‡ *'Aspera Juno,
Quæ mare nunc terrasque metu cælumque fatigat.'*

wars and invented useful arts. She was the friend of Ulysses, and under the form of the aged Mentor, watched over and counselled his son Telemachus.

For a perfect female character, it would be necessary that the soft and tender heart of Venus should be added to the judging head of Minerva, and the dignity without the hauteur of Juno. As to personal beauty, this depends so much upon the expression of mental qualities, united to grace and dignity of demeanor, that the plainest daughter of Eve who should thus unite *sensibility*, *wisdom*, and *dignity*, would appear beautiful and lovely.

Minerva is usually represented with a helmet upon her head, and in her right hand a spear, and the formidable ægis or shield with the head of Medusa in her left. The owl, which is sacred to her, is usually seen near her. This goddess showed that she was not wholly destitute of that weakness which (whether deserved or not, you must each judge for yourselves) the world have persisted in ascribing to her sex. Having invented the flute, she was one day playing on this instrument, when she perceived by the reflection of herself in a river, that the effect upon her personal appearance was far from being to her advantage; upon this the fable says, she threw her flute away! Of all the satires of the ancients upon women, this is one of the most severe.

Apollo, in the Grecian mythology, is made to sustain various characters. He is the charioteer of the sun, the god of music, medicine, poetry, prophecy, the fine arts and archery. He is called Sol, Phæbus and Helios. Apollo and Diana were twins, the children of Jupiter and Saturn; they were born upon the Isle of Delos. Some of the goddesses wrapt him in soft garments, while others fed him with nectar and ambrosia. He had no sooner tasted the food of the gods, than throwing off his swathing bands he appeared as a blooming youth, and exclaimed; 'the golden lyre shall be my joy, the carved bow my pleasure; and in oracles, I will reveal the events of futurity.' Thus speaking, he marched forth majestically and at length arrived at the foot of mount Parnassus, from whence he ascended to the mansions of celestial beings. Here, welcomed by the graces, he charmed the

deities with the tones of his lyre, while the muses responded to his harmonic numbers.

Diana, the sister of Apollo, is represented by the moon, as Apollo is by the sun. Three of the goddesses, Minerva, Vesta, and Diana, devoted themselves to celibacy, refusing to yield to the power of Venus, the goddess of love. Diana is the patroness of the chase: she was usually represented by ancient sculptors with a bow and arrow suspended from her shoulder, and a torch in her hand.

Mars, the god of war, was the son of Jupiter and Juno; his characteristics were impetuosity and courage, unrestrained by wisdom. On complaining to his father, Jupiter, that Diomedes, aided by Minerva, had wounded him in a combat before the walls of 'Troy, he was thus reproved; 'Trouble me not with thy complaints, who are to me the most odious of all the gods that dwell on Olympus, for thou knowest of no other pleasure but strife, war, and contest; in thee dwells the whole character of thy mother, and hadst thou been any other than my own son, thou wouldst long ago have been plunged deeper into Tartarus than the 'Titans.' Bellona, the sister of Mars, is his charioteer.

Mercury was the son of Jupiter, and Maia the daughter of Atlas. He was born in the morning, and at noon leaving his cradle, he saw by the threshold a tortoise, which he thus addressed: 'Thou art now the dumb, but after thy death thy song shall be heard.' Having killed the animal, he fitted to the shell, seven strings, from which he drew forth sounds which so delighted him that he broke forth into praises of the domestic utensils about his mother's dwelling, until his song soared at length to the sublimest subjects. Mercury was the swift messenger of the divinities, and the god of language; the tongues of victims were offered to him in sacrifice. He was also the pattern of trade and of cunning devices. The Greek name for Mercury was Hermes, a word signifying to interpret. It is generally believed that, under these names, divine honors were paid to some person, who in a remote period of antiquity had enchanted mankind by his poetry and benefited them by useful inventions.

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Bacchus, the god of wine, was celebrated by the most tumultuous and licentious rites. He is usually represented as followed by Silenus, an old man seated upon an ass and reeling with intoxication, while sarcastic satyrs and sportive fawns are dancing around him.

Vulcan, a son of Juno, being deformed and lame, was by Jupiter, thrown from Olympus down to earth. He was afterwards admitted to the assembly of the gods whom he amused with his awkwardness and wit. He was the husband of Venus, to please whom, he, with the aid of the Cyclops, manufactured arms for Æneas.* To him was committed the business of making Jupiter's thunderbolts : his principal forge was under Mount Etna.

Ceres, the goddess of corn, taught mortals to cultivate the earth ; she was the mother of Proserpine, whom Pluto privately seized and carried off to the infernal regions to his queen. Ceres having learned the abode of her daughter, obtained Jupiter's consent for her release from hell, provided Proserpine had not tasted the food of those realms of darkness ; but this, not being the case, she could never be wholly restored to her former companionship with the celestials.

Vesta was worshipped by the ancients, as the deity who presided over domestic comfort, as the one who taught families to gather around the sacred hearth, and to prepare food with fire.† She, they believed, taught man to build a shelter for himself and those he loved ; thus the entrance into a dwelling was called the *vestibule*, and considered as sacred to Vesta.

2. *Marine Deities.* The sea was made subject to Neptune,

* 'Terram, exercebant vasto Cyclops in antro,
Brontesque, Steropesque et nudus membra Pyracmon.'

The Cyclops in their vast cave, labored upon the steel, Brontes,
And Steropes, and the naked limbed Pyracmon.

† The domestic hearth was consecrated to Vesta ; thus, Æneas :

'Cineram et sopitos suscitât ignes,
Pergameamque Larem, et candæ penetralia Vesta,
Farre pio, et plena veneratur acerra.'

Æneas awakes the embers and dormant fire, and suppliant worships his Trojan—household god and the shrine of ancient Vesta, with a holy cake and full censer.

the brother of Jupiter. He was the father of the monstrous cyclop, Polyphemus,* who had been deprived of his eye by Ulysses. For this injury, Neptune pursued him with his vengeance, causing him to suffer shipwreck and all the perils of the sea ; but from these he was preserved by the aid of Minerva. Neptune produced the winged horse Pegasus. At a certain time, he was sent by his master to command the Muses to put a stop to their songs and mirth, which so shook the surrounding regions, that Helicon itself was dancing beneath their feet. Having reached the top of Mount Helicon, Pegasus executed his commission by pawing violently upon the ground ; whereupon that fountain burst forth from which poets have since drank the divine inspiration ; this was called Hippocrene. Neptune is represented in antique sculpture, as holding in his hand a trident or fork with three teeth instead of a sceptre ; he is drawn by sea horses ; his son Triton is blowing a trumpet made of a sea shell, and the dolphins are sporting around his chariot. Amphitrite is the wife of Neptune and queen of the sea ; she appears seated in a car shaped like a shell and drawn by dolphins ; the sea nymphs hold the sail which is swelled by the breath of Zephyrus (the west wind) ; like her husband, she holds a trident in her hand, by which she rules her empire.

Proteus, a son of Oceanus, is the keeper of Neptune's seals ; he is considered an allegorical representative of nature, assuming every variety of appearance, fire, water, animal, plant, or mineral ; to those only who grasped him firmly, he revealed his real character.

3. *Infernal Regions and Deities.* The dominions of Pluto included both Tartarus, the abode of the wicked, and Elysium, the dwelling of the good and happy. The Atlantic Ocean was considered the boundary of the earth, Mount Atlas sustained the sky upon its broad shoulders, and near the western horizon were the gardens of Hesperides, with their golden fruits.

The river Acheron was the passage from the earth to

* 'Monstrum horrendum, ingens informe ; cui lumen ademptus.'
A huge, misshapen, horrible monster ; to whom sight was wanting.

the dominions of Pluto, over which Charon ferried departed souls, and on the opposite bank was the three-headed dog Cerberus. Cocytus, Styx, Phlegethon and Lethe were rivers of Tartarus;* Milton says :

‘ Four infernal rivers disgorge
Into the burning lake their baleful streams :
Abhorred Styx, the flood of deadly hate ;
Sad Acheron, of sorrow black and deep ;
Cocytus, named of lamentation loud
Heard on the rueful streams ; fierce Phlegethon,
Whose waves of torrent fire inflame with rage,
Far off from these a slow and silent stream,
Lethe, the river of oblivion, rolls
Her watery labyrinth, whereof who drinks,
Forthwith his former state and being forgets,
Forgets both joy and grief, pleasure and pain.’

Pluto was called by the Greeks, *Hades* the *Invisible* or *Unknown*. He was sometimes called Stygian Jove. At Alexandria in Egypt, he was worshipped under the name of Jupiter Serapis. He was considered as presiding over the dead and funeral obsequies. The seizure of Proserpine by Pluto is considered an allegorical representation of youth and beauty falling a prey to sudden death. In these gloomy abodes Pluto and Proserpine are seated in that eternal and mournful silence, which is characteristic of their empire.

Plutus is the god who presides over riches ; deformed and wretched, he is represented as seated on a throne of gold under a canopy studded with precious gems. This allegory shows the unsatisfying nature of wealth ; thus Milton,

‘ Let none admire
That riches grow in hell ; that soil may best
Deserve the precious bane.’

* ‘ *Huic via, Tartarei quæ fert Acherontis ad undas :
Turbidus hic cæno, vastaquæ voragine gurgēs
Aestuat, atque omnem Cocyto eructat arenam
Portitor has horrendus aquas er flumina servat
Terribili squalore Charon.*’

Here is a path which leads to the waters of Tartarean Acheron, here a turbid and impure gulf boils with mud and vast whirlpools, and vomits all its sand into Cocytus. A grim ferryman guards these floods and rivers, Charon, frightfully squalid.

4. The *Fates*, (*Parcæ*) were the destinies who presided over the lives and fortunes of man ; Clotho holds the distaff, Lachesis spins the thread of life, and Atropos, with the terrible scissors, cuts it off.

The *Furies*, were Tisiphone, the avenger of murder ; Megaera the wrathful, and Alecto the restless—these are frightful beings, with snakes, instead of hair, and garments smeared with blood. The Furies were so dreaded by men, that their names were seldom pronounced. They were supposed to pursue the guilty with never-ceasing tortures ; thus Orestes for the murder of his mother was forever followed by their vengeance.

5. Besides the Celestial, Marine and Infernal gods, the ancients paid divine honors to a race of *Demi-gods*, or *heroes*, who had distinguished themselves for some great exploits ; as Perseus who cut off the head of the dreadful Medusa, and devoted it to Minerva ; by her it was placed in the centre of her shield, the mighty *ægis*. Perseus, delivered Andromeda the daughter of Caseopeia from a monster ; these names have been immortalized by being transferred to the constellations.

Bellerophon signalized himself by the destruction of the monster Chimera ; Hercules was distinguished for many great acts, by which he freed the earth from plagues of various description. The names of Theseus, Jason, and many other famed heroes, are recorded in the annals of mythology. Some of them undoubtedly were distinguished men of a remote period, others are probably wholly fabulous beings.

6. Too much of our time has already been given to the consideration of Mythological fictions, and yet we cannot close the subject without noticing a class of imaginary beings, who in the minds of men seemed to form a connecting link between the gods and men—these were the nine Muses, daughters of Mnemosyne (memory) to whom their venerable mother imparted the treasure of her wisdom :

Clio was the Muse of history,
Calliope, of epic poetry,
Melpomene, of tragedy,
Thalia, of comedy,
Polyhymnia, of eloquence,

Urania, of astronomy,
Euterpe, of the flute,
Terpsichore, of the dance,
Erato, of song.

7. The Sirens were represented as monsters, who appeared from the waist upward like beautiful females; they attempted to rival the Muses, but the songs of the former were false and seductive, while those of the latter were true, and led to virtue. Cupid, the son of Venus, was the god of love; he was a beautiful blind boy, generally represented as holding in his hand a bow and arrows.

8. The Graces were Aglaia, Thalia, and Euphrosyne; they were sent to mortals to inspire kind and agreeable feelings; without their aid, beauty itself was considered incapable of commanding homage. They were represented as three sisters, who in their various attitudes, expressed every variety of personal dignity and elegant motion; exemplifying by their union the tender emotions of love, friendship and kindness.

9. *Rural Deities*.—These were *Nymphs* or beautiful creatures who presided over the springs and fountains, the forests and hills; to each of these was supposed to belong its living and animating spirit. The Naiad sat at the fountain pouring forth the warbling brook from her pitcher. The Dryads animated the solemn gloom of the forests, and the Hamadryad was confined to her individual tree. In the felling of each tree, it was supposed its wood nymph perished.

10. The Satyrs and Fawns, formed a connecting link between man and the brute creation, having the semblance of a human being, united to the horns and feet of a goat: they were followers of Bacchus.

Pan was the principal of the rural deities. He invented the reed, or the shepherd's flute. He was feared by herdsmen and shepherds, who ascribed all unusual inexplicable sounds to Pan; hence it is said the term panic-struck was derived.

Among the Romans every family had its tutelary divinity. Terminus was the guardian of landmarks; Pales, the goddess of shepherds; Flora, of flowers; Pomona, of fruits; Comus, of wit; Momus, of sarcasm; Hymen, of marriage; Orpheus, of music; Æsculapius, of medicine; Hygeia, of health.

Among the favorites of the gods was Ganymede, a descendant of Dardanus, the founder of Troy; he was the most beautiful of men, and was chosen by Jupiter to bear nectar to the gods. Hebe, the former cup-bearer, having been careless enough to fall when performing this office, was considered too ungraceful to serve at the table of the gods.

Of the thirty thousand deities, said to have been recognized by the Grecian Mythology, we have named those who are most frequently alluded to by the poets. From the quotations we have made from Virgil, (and these might have been greatly multiplied,) you will see that the *Æneid*, without some knowledge of these fictions, would be divested of much of its interest, and indeed would not be understood in many of its passages.

Miss Edgeworth remarks, ‘ Classical poetry without the knowledge of mythology is unintelligible. Divested of the charms of poetry, and considered without classical prepossession, mythology presents a system of crimes and absurdities, which no allegorical, metaphysical, or literal interpreters of modern times, can perfectly reconcile to common sense, or common morality; but our poets have naturalized ancient fables, so that Mythology is become essential to modern literature. The associations of taste, though arbitrary, are not easily changed in a nation, whose literature has attained to a certain pitch of refinement, and whose critical judgments must consequently have been for some generations traditional. There are subjects of popular allusion, which poets and orators regard as common property; to dispossess them of these seems impracticable, after time has sanctioned the prescriptive right.’

Seeing so much, in the long vista before us, which must be accomplished in order to redeem the pledge given in the outline of my Lectures, I gladly turn from the episode with which I have indulged you, to subjects of deeper interest than mythological fable. In our next lecture we will consider these studies which have for their object, the *real existences*, with which the great author of our own being, has surrounded us.

How grand, how sublime do the truths of revealed

religion appear to us when contrasted with those fables which the heathen poets thought worthy of so much pomp of language! 'I am the Lord, and there is no God beside me,' is the language of "the High and Holy One who inhabiteth eternity."—He needeth no long train of subordinate agents to accomplish his purposes: 'He speaks and it is done!'

'The earth is the Lord's, and the fullness thereof.'—It is this fullness, those works which their Creator pronounced 'good,' that, in the study of Natural Science, we are led to examine, to analyze into their original elements, and arrange according to their various relations, and the laws of that most wonderful of the Almighty's works, the human mind.

LECTURE XV.

Natural Science, Astronomy, Natural Philosophy.

THE erroneous opinions which have prevailed with respect to education, appear nowhere in a more striking light, than in the neglect with which *nature* has been treated, by those who aspired to teach useful knowledge, and to bring forward the young, fitted for the duties of life. Books in abundance were given the pupil, and a knowledge of their contents was considered a sufficient preparation for the world into which they were about to enter. How wonderful that the *great book of nature* should have been passed unheeded,—that the air they breathed, the water they drank, the fire that warmed them, the stones beneath their feet, the mountain masses, the glittering mineral, the flowers which they loved to look upon, the noble animals and the little insects, the pearly treasures of the ocean and streamlet—how wonderful that all these should have been deemed incapable of interesting the attention of the young.

There have indeed ever been some lovers of nature,

some who sought to penetrate her mysteries and unfold her laws; but the generality of students in our popular schools, have, it might seem, almost studiously been kept ignorant of those mysteries and laws;—ignorant, of their very existence. A plant was seen simply as a thing ornamental, useful or noxious. The idea of its relation to other plants, to the atmosphere, soil and light, of its being a part in the vast series of creation, never was suggested during my own school education; all subjects connected with natural science, being kept out of view, in female academies, as much as alchemy or heraldry now are.

Natural Philosophy in the form of a little catechism, was indeed introduced, but it was wholly a matter of faith; the idea that anything contained in the book could be proved by experiment, could be made manifest to our ears and eyes, never presented itself. Chemistry when it first begun to be taught in female schools, was only theoretical. It was to be sure a hard task to learn by heart, without the least idea of their properties, such names as oxygen and nitrogen—to remember that air was composed of these, and that water was composed of oxygen and hydrogen. Of the real existence of these substances we had as little conception as of the monster Chimera, or any other fabulous creation. The subject of chemical analysis can indeed only be comprehended by the assistance of the senses.

At the present time, Natural Science is receiving by those who superintend the education of youth, that attention which it so deservedly merits. The term Natural Science signifies a knowledge of nature, and thus comprehensive, it includes not only the consideration of all substances upon the globe and the atmosphere around it, but of the heavenly bodies. This general science of nature, is also termed *physics*, a word derived from *phusis*, *nature*. Under the head of Natural Science, according to the definition just given, may be ranked its subdivisions, Astronomy, Natural Philosophy, Chemistry, Natural History.—Under Natural History are its subdivisions, Zoology, Botany, and Mineralogy; and under the latter is the subordinate branch, Geology.

Astronomy. Astronomy is a term derived from *aster*, a star, and *nomos*, a Greek word signifying name. We have made some allusions to this science under the head of geography, and our time will not permit us to dwell with minuteness on each branch of study, however interesting and important.

There is certainly no science which seems more calculated to exalt the soul and fill it with sublime conceptions of the great Author of nature, than Astronomy. The mere sight of the heavenly bodies, without any knowledge of the regularity of their motions; the uniformity of the laws which govern these motions; the vast distances which separate these bodies, and yet their relations to each other; the mere sight of the heavens without any knowledge of all this, is sufficient to inspire the human soul with wonder and admiration: but when science unfolds her discoveries, then truly does man stand abashed before Him who 'sitteth in the circle of the heavens, who made heaven and the heaven of heavens with all their host, who preservest them all, and by whom He is worshipped.' In the words of an elegant writer,* a serious contemplation of the sublime objects which astronomy has explored, must, therefore, have a tendency to inspire us with profound veneration of the Eternal Jehovah,—to humble us in the dust before his august presence—to excite admiration of his condescension and grace in the work of redemption,—to show us the littleness of this world, and the insignificance of those riches and honors to which ambitious men aspire with so much labor and anxiety of mind,—to demonstrate the glory and magnificence of God's universal kingdom,—to convince us of the infinite sources of varied felicity which he has in his power to communicate to holy intelligences,—to enliven our hopes of the splendors of the 'exceeding great and eternal weight of glory,' which will burst upon the spirits of good men, when they pass from this region of mortality,—and to induce us to aspire with more lively ardor after that heavenly world, where the glories of the Deity and the magnificence of his works will be more clearly unfolded.

* Thomas Dick.

Natural Philosophy. From the consideration of the heavens, we descend to those branches of the study of nature which relate to the globe, with the objects upon its surface, and the atmosphere around it. Natural Philosophy acquaints us with the general properties and mechanical laws of bodies, the physical laws of attraction, light and electricity: it is founded on observation, and experiment, and derives important assistance from mathematical science.* Taking this definition for our guide, we will briefly consider some of the many subjects embraced in this comprehensive science.

1. *The general properties of bodies.* Our knowledge of the properties of matter depends wholly on our senses; and when we say that it has a certain number of properties, we should always consider that this number is only relative to our senses. Take from man the sense of vision, and he would have no idea of color as a property of matter; take away the sense of touch and muscular power, and he would have no conception of hardness or softness as a property of matter. So of our other senses, the loss of any one of which would abridge matter of some of the properties that we now ascribe to it.

But suppose, on the other hand, that a new sense were added to man; is it not probable that he would perceive new qualities in matter, such as his 'philosophy has never yet dreamed of?' We see then how limited is our knowledge of the material world. The mind has its five servants, the senses, to labor in the great work of finding out the mechanism of a world; and the sphere of their operations is so limited and circumscribed, that there are probably, in nature, kingdoms and provinces which they have no power to enter, and which are to them wholly unperceived.

How august, how mysterious appears the world of matter around us, when considered in this light, and how does the enumeration of the few properties, which our philosophy ascribes to it, strike us with a sense of our own limited faculties, which perceive so little of the rich variety, the stupendous majesty of the eternal

* See the author's Dictionary of Chemistry, p. 11.

world. And yet we know much—for though our list of the properties of matter be small, the various respects, the infinite relations of each one of these properties is truly astonishing.

Matter is known to us only through the medium of the mind, as affected by the senses. We call that body, *matter*, or *material substance*, which can affect one or more of our senses. The sight, touch, hearing, taste and smell, are all called upon to give the mind knowledge of the existence of matter, and the impossibility of supposing an effect without a cause, renders the existence of the cause which acts upon our senses, as certain as the existence of the senses which are acted upon.*

How far matter extends is a subject on which philosophy is still as much in doubt as in the commencement of her researches. Newton discovered the principle of *gravitation*, and on the supposition of its existence, explained the relation of the planets, and various other phenomena of nature. But what gravitation is, philosophy has not presumed to explain. The fragrance of a body, we know to be minute particles of the body itself, which, diffusing itself into the atmosphere, reach our organs of smelling, and thus produce a certain ef-

* Dr. Brown supposes that of all our senses, none but that of touch, aided by muscular action, could give us an idea of an external world. 'With no sense but that of smell,' he says, 'the fragrance of a rose would appear but as a pleasant feeling, springing up spontaneously in the mind. Music, or sounds of any kind, with the sense of hearing only, would give us no idea of anything without ourselves. Taste, separated from the tactual feeling, would not suggest an external object; even vision, he thinks would but paint upon the retina of the eye an indistinct mass of color without figure, or without informing the mind of the existence of an external object.' But, according to Dr. Brown, the muscular sense is the key which unlocks the mysteries of the world without us, and renders our other senses of use. We may go along with Dr. Brown through the consideration of the senses of smell, hearing and even taste; but when he would deny the power of unaided vision, to suggest an external object, we feel that he is drawing too largely upon our credulity, and suspicions being awakened of the legitimacy of his reasonings, we are inclined to take back the assent we yielded to the first of his assertions, with respect to the independent agency of each sense in teaching the existence of matter.

fect on the mind, which is termed a sensation. Is gravitation a subtle yet powerful fluid, emanating from one body and drawing another towards it? Is it material? Or what unknown secret sympathy can actuate masses of inert matter, causing them to rush towards each other in a cold and dead embrace? These things are suggested, not with a view to confuse your minds, or to lead you to think that all philosophy is but speculation, all science a collection of enigmas. But there are questions in science, which are vain and useless; questions that have occupied, to no purpose, the time and talents of those who desired to benefit the world. Lord Bacon observed, that there was more true philosophy to be found in the workshops than in the schools; in the former, all was practical; in the latter, utility was sacrificed to speculation.

Yet there are now certain principles established in science which are subject to no fluctuations, and which afford a firm basis for future discoveries. Questions as to the *essence of matter*, the *secret springs of the machinery of the universe*, and the *first causes of things*, are by common consent exploded as profitless and unfathomable. To watch nature in her operations, to note the process by which these operations are carried on, and, from particular cases, to form general conclusions, is now the professed aim of men of science. Important applications are thus made of principles discovered, which tend to advance the improvement and happiness of society.

The subjects embraced by this science are numerous, and highly important. *Mechanics* investigates the laws of gravitation, as they operate in the different phenomena of motion and of central forces. It considers the theory of machines, the properties of the mechanical powers, with the principles on which they are made to operate, and the effects to be produced. From this branch of Natural Philosophy have originated some of the most wonderful discoveries and inventions which mark the history of man. Agriculture, manufactures, architecture, navigation, the fine arts, and even the sciences themselves, owe to mechanical philosophy the instruments by which they are severally enabled to carry on their operations. It is the mainspring in social and civilized life;

and he who discovers a new principle in mechanics, or a new application of a previously discovered principle, is more useful to the world, than he who writes volumes of idle hypotheses, however rich the language, or fascinating the manner in which they are communicated. 'Happy he, whose name descends to posterity as the author of a useful invention, or the discoverer of a new principle. We cannot honor too much the man, who opens a new career of knowledge to the human mind. The difficulty of the first discovery is always the greatest; and the merit of inventing is always greater than that of perfecting; as in total darkness it is more difficult to strike a light, than to kindle others by the flame of the first.'*

The remaining branches of natural philosophy, we have scarcely time to mention. *Hydrostatics*, which treats of the pressure and equilibrium of water, is derived from the Greek, *hudor*, water, and *stat*, a derivation from the Latin verb to stand.

Hydraulics, derived from *hudor* and *aulos*, a pipe, is a branch of hydrostatics, and signifies the science of conveying water by pipes.

Pneumatics, from *pneuma*, air, and *mathesis*, learning, treats of the nature and properties of the atmosphere.

Acoustics, from *akouo*, I hear, treats of sound, its laws, and the various phenomena connected with it.

Optics, from *ops*, the eye, treats of vision, and the laws which govern the transmission and reflection of light.

Electricity was so named from its having been discovered in amber, which in Greek is called *electron*. This science explains the operations of one of the most wonderful and all-pervading principles in nature. The electric fluid appears to be diffused as extensively as matter itself, and to operate not only in the terrific phenomenon of lightning, but to be active in some of the most silent and gradual changes in nature. Chemical attraction has of late been suspected to be owing to a union of the negative and positive electricities, and even the physiology of organized life has been thought to bear some mysterious relation to the electric fluid.

Galvanism, so named from Galvani, the discoverer, is

* Encyclopedie Portative.

considered as a modification of electricity, differing however in this circumstance, that in the former, the effects are mostly produced by the *chemical action* of bodies upon each other, while in the latter, the effects seem to be more the result of *mechanical action*.

Magnetism. This singular principle resides in the loadstone, or the *dentoxide of iron*. The magnet is known by its property of attracting steel and iron. It is an iron, composed of 72 parts of metal and 28 of oxygen. A fragment of this metal, if placed upon a pivot, always points to the north and south, being always provided with two poles: opposite poles of two magnets attract, while similar poles repel each other. The most important use of the magnet is, the certainty with which it guides the mariner through the trackless ocean; and were this the only advantage to be derived from its discovery, the benefits would be incalculable. The magnetic fluid appears to have an intimate connexion with electricity and galvanism, as those have with light and heat: it has been suggested that all these agents are but modifications of one great principle.*

Sketch of the History of Natural Philosophy. Having now remarked, in a very general manner, upon the subjects embraced under Natural Philosophy, we will glance at the origin and progress of this science. The ancient philosophers in their schools, considered without any reference to their different objects, the various kinds of knowledge. They united natural with moral philosophy. Their progress in the latter science was much greater than in the former.

Thales, one of the seven wise men of Greece, lived four hundred years before Christ; he was the founder of the Ionian school. He is the most ancient of the Greek philosophers who applied themselves to the study of nature; he explained eclipses, discovered electricity in amber, and made some important experiments.

* Electricity, Galvanism, and Magnetism are usually treated of under the head of Chemistry, as well as Natural Philosophy: indeed, some chemists have been led to conjecture that all chemical decomposition is performed by the agency of the opposite electricities.

Pythagoras, one hundred years after Thales, in his school rendered illustrious by the discovery of the true system of the earth, taught something of the theory of sounds, and other subjects connected with natural philosophy; but as he built theories upon hypothesis and not experiment, nothing was added by him to the science. He is celebrated for having suggested the true theory of the earth, afterwards revived by Copernicus.

Democritus, four hundred seventy years before Christ, employed himself in the study of Mechanical Philosophy; he suggested the atomic theory of bodies; viz. that all bodies consisted of certain minute parts, or *atoms*, which were indivisible; these were called *ultimate atoms*. Democritus was considered as guilty of contempt towards man, because he occupied himself more in the study of *matter* than *mind*. His works being lost, all that continued to be known on the subject of natural philosophy, was what related to certain of the arts, such as the working of metals. It was thought beneath the dignity of science to descend to what was merely useful. Plato reproached geometry for descending to assist the necessities of man.

Aristotle, whose name has for so long a time been held in almost idolatrous reverence by the followers of science, seems not to have arrived at any general principles by his manner of investigating. His facts were insulated and incomplete, and furnished no means of generalizing; indeed his metaphysical ideas were averse to generalization. Thus we find the progress of physics retarded by false views then entertained of the nature of the mind. The science founded on facts is comparatively of modern origin; the laws of science derived from the comparison of well established facts, are still more recent.

Archimedes, of Syracuse, flourished about two hundred fifty years before Christ. He united to the most profound knowledge of mathematics, a close observation of natural phenomena, and an uncommon genius for investigation. He discovered the manner of ascertaining the specific gravity of bodies, by weighing them in water; experimented upon solar rays by concentrating them to

a focus, and made many observations upon the refraction of light. This philosopher seemed intuitively to conceive that the proper method of philosophising was to collect facts, to combine them, and thus establish general laws—that afterwards by applying these laws to nature, a new mode of discovery might be obtained, leaving it to future experience to prove the theories thus suggested.*

After Archimedes, no genuine priest of nature appears in a long career of ages : as men had before seemed to want science, science now wanted men. And until Bacon and Galileo, in the seventeenth century, nothing of importance was added to physical science. Bacon did not indeed add to science by any actual discoveries, but he pointed out the mode by which investigations should be conducted, in order that advances might be made. Experiment and observation, were by him considered the only sure routes to an accurate knowledge of nature.

Galileo about this time made an accurate calculation of the ratio of falling bodies, giving the first application of mathematics to physics. Torricelli, the pupil of Galileo, invented the barometer ; Bayle invented the air pump. The scientific societies of London and Paris were founded, encouragement was offered for discoveries, new works were published, and at length science was enlightened with the discoveries of Newton. The methods of observation and calculation of this great man, have been followed by later philosophers, and the study and knowledge of his works have been considered as sufficient to entitle them to a high rank. The influence of this powerful genius in all the sciences of observation would be a subject worthy of interest ; if we add his own discoveries, those which he has suggested, and the improvements which these have produced in other sciences, we can form some idea of the vast influence which one great mind may exercise upon the knowledge, virtue and happiness of the world.

Since the time of Newton, many important discoveries have been made in mechanical philosophy. The arts

* For an interesting sketch of the History of Physical Science, the reader is referred to a small French work—'*L'Encyclopedie Portative.*'

of steam navigation, construction of rail-roads, &c. are at this period effecting a change in the future condition of the world, greater than we at present can conceive; and the improvements which may arise upon those already made are beyond the utmost stretch of imagination.

Before closing our remarks on the study of Natural Philosophy, permit me to remind you, that this is emphatically a science of facts. While pursuing it, turn your thoughts to the real appearances of nature around you, consider the knowledge of books as nothing, but as it serves to turn your attention to the changes which are constantly taking place. If you enter a mechanic's shop, examine the implements, or machinery, with a view to the application of your theoretical knowledge. Do not scorn to listen to the most simple account of mechanical operations; they are carried on by principles, which you have learned from books, and which the mechanic, though ignorant of science, understands practically. If you are travelling in a steam-boat or upon a rail-road, make yourselves acquainted with the principles by which the motion is produced or which are involved in the construction of the machinery; or if you understand these principles, do not fail to notice whenever you see them practically illustrated.

Our sex have, in general, far less observation than the other. We incline too much to live in the little world of our own thoughts. Let two young persons of different sexes, unaccustomed to travelling, find themselves for the first time on board a ship or a steam-boat. The female probably occupies herself with thoughts of the friends from whom she has parted, or of those whom she expects to meet; memory and imagination are busy, but her powers of observation slumber, unless perhaps exercised in noticing the dresses of those around her, their peculiarities of manners, and probable standing in society. The young man, very likely, examines the construction of the ship, or steam-boat, its size, the velocity with which it moves, and the appearances of the different natural objects which present themselves.

I am far from asserting that there is always this difference in the operations of the mind in the sexes; for there

are females of close observation upon works of art and nature, and men who observe superficially. The effect of the study of the different branches of Natural Science is to produce habits of observation, and in this respect as well as their general tendency to enlarge the mind, and to render life more happy and elevated, they are deserving the attention of females.

LECTURE XVI.

Chemistry.—History of Chemistry.

THE science of Chemistry is of peculiar interest to our sex; its applications to domestic economy are numerous and important. These applications are however yet but little understood; the reason of this is, that chemists, are not housekeepers, and housekeepers are not chemists. The various processes in culinary operations are mostly performed on chemical principles, yet those principles are seldom known or thought of by those who perform the operations. I am aware that many a good housewife might smile at my remarks, and say she would not exchange her *experience* for all the theories which chemistry can give. It is very true that your excellent mothers and grandmothers may possess that experience in domestic concerns which enables them to perform complicated operations with ease and safety; but even they, I think, would delight to understand the causes of effects which they have been for so many years witnessing, and agents in producing.

For instance, no article is in more common use in house-keeping than pearlash. In making gingerbread this is used to render it light. The common method is, to put vinegar into the pearlash, and while it is effervescing, to add it to the other materials.

But why does pearlash make gingerbread light? If you were to make this inquiry of many women, they

would look astonished at what they would conceive to be a 'foolish question:' they would say perhaps, 'because *it is natural*,' or '*because it does*,' or because '*it is so made*,' &c. I would not unnecessarily expose a weakness of my sex, but we are quite too apt to give for a reason, that which is no reason at all.

The simple explanation of the process above mentioned is this; pearlash is a *carbonate of potash*, or *potash* united to *carbonic acid*; vinegar contains a peculiar acid called *acetic acid*; for this acid, potash has a greater affinity than for carbonic acid. When vinegar is added to carbonate of potash, the potash choosing the acetic acid of the vinegar begins to expel the carbonic acid, this produces an effervescence; the effervescing mass being added to the flour, the carbonic acid in the form of little bubbles of air, instead of passing into the atmosphere, becomes entangled in the gluten of the flour, swells it out, and thus makes the gingerbread light. The potash forms with the acetic acid the new combination, acetate of potash.

When bread is suffered to rise or ferment too long, the *acetous*, or souring fermentation begins, and the dough becomes sour. In order to remedy this, a solution of pearlash (carbonate of potash) is introduced; the acetic acid (which causes the sourness,) is absorbed by the pearlash and the carbonic acid of the pearlash is set free. This escaping in the form of little air bubbles increases the lightness of the dough.

You will perceive from the examples now given, that chemistry is a science which is intimately connected with the peculiar business of women. But as I have already remarked, the applications of this science to domestic operations, although numerous and important, are yet far from being as extensive as we might expect from the perfection which chemistry has attained. It is to be hoped that as educated women engage in the duties of housewifery, culinary chemistry will receive more attention than it has heretofore done.*

* A chemical text-book for female schools is now in progress; this is intended to embrace all the known applications of chemistry to the business of house-keeping, in its various branches.

I shall now proceed to give a general view of chemical science, with an outline of its history. In doing this, I shall refer to my Dictionary of Chemistry, which contains articles prepared in accordance with my present views of the manner in which these subjects may profitably be presented to the mind. Where the pupil already has a knowledge of the science, such outlines are highly useful in condensing and systematizing what is learned; when the subject is new, sketches may excite sufficient curiosity and interest to lead the mind to desire more information. It was indeed, when engaged in writing the articles for the work above named, that the thought first occurred to me of the benefits which you might derive from similar sketches of the leading principles, histories, and practical applications, of the various branches of study, which enter into the plan of education pursued in this institution.*

Chemistry is a science no less elevated in its general views than various in its applications; its object is to examine the *elements* or *first principles* of substances and their laws of combinations, its application to other sciences, to arts, medicine, manufactures and housewifery, are numerous and important. It may be divided into *organic* and *inorganic* Chemistry.

Organic Chemistry is confined to the investigation of the elements of vegetable and animal substances, and the laws which govern their combinations. This department, including the whole of animal and vegetable poisons, and their antidotes, is intimately connected with the study of medicine. The same elements, differently proportioned and combined, constitute all organic and inorganic substances.

Inorganic Chemistry includes the study of the elements of all matter confined to the combination of these elements in inorganic bodies. The ancients conceived that there were but *four elements*, or first principles, viz. *earth, air, fire, and water*. Chemistry has shown that all these substances, except fire, (the nature of which is

* The remainder of the Lecture on Chemistry was taken from the author's Dictionary of Chemistry, published by Messrs. Carvill, of New York.

still doubtful,) are compound; *air* is composed of two gases, called oxygen and nitrogen; *water*, of oxygen and hydrogen; and *earth* of a variety of substances, which in their turn may be decomposed.

Nature offers substances in four different states, *solid*, *liquid*, *gaseous*, or *aëriform*, and *imponderable*, or such agents as are not known to possess weight. All matter is composed of *molecules*, particles, or atoms; these are subject to two opposing laws, the *force of attraction*, which tends to keep the atoms in contact, and that of *caloric*, or heat, which separates or repels them.

Simple substances are those whose atoms are *homogeneous*, or of the same nature. Thus zinc is considered as a simple substance, because it contains no other atoms than those of zinc.

Compound substances are such as contain two or more simple elements; thus, brass is a compound body, which on being decomposed is found to contain atoms of zinc and copper. The particles which constitute a simple body are called *integrant molecules*, and the force which keeps them together is called *cohesion*. The particles which form a compound substance, are called *constituent molecules* and the force which unites them is termed *affinity*. Thus, zinc is formed of integrant molecules united by the force of cohesion, and brass is formed of constituent molecules united by the force of affinity.

Affinity. Affinity is that kind of attraction which unites the *heterogeneous molecules*, or atoms of *compound bodies*. A knowledge of chemical affinity is very important in investigating chemical changes; the first consequence of this law is a change of state of the bodies; thus the union of two gasses, oxygen and hydrogen, produces water. A second and important consequence is a change of the property of the new substance; thus from the combination of an acid and an alkali possessing opposite properties, results a salt resembling neither of the original substances. It is at present believed by most chemists, that chemical affinity depends essentially upon the electrical state of the substances, that electricity is divided into two fluids: the one *positive*, the other *negative*, and that molecules of the same kind of electri-

city repel, while those of opposite electricities attract each other.

Theory of Atoms. By atoms or particles are understood parts incapable of division or diminution; much precision is given to the science of chemistry by admitting that bodies consist of atoms which unite in certain proportions; thus in water we suppose two atoms of hydrogen united to one of oxygen; or which is the same thing, two hundred atoms of the former to one hundred of the latter. The theory of the proportions between the elements of bodies is not hypothetical, but in many cases has been proved by experiment; thus the following proportions are universally observed.

200 atoms of hydrogen and	100 of oxygen=	water.
300 " " " " "	100 " nitrogen=	ammoniacal gas.
100 " " ammonia "	50 " carbon=salt of	ammonia.
100 " " nitrogen "	50 " oxygen=	protoxide of nitrogen.
100 " " " " "	100 " =	deutoxide of "
100 " " " " "	150 " =	nitrous acid.
100 " " " " "	250 " =	nitric acid.

Simple Elements. The number of simple elements admitted by chemists, varies with the progress of the science; such substances as no chemical force can decompose are called simple; many which are thus named, will, no doubt, in process of time be decomposed, while other elements, now unknown, will be brought to light, and found to be important agents in chemical changes.

Instead of the four elements of the ancients, chemists at present admit more than 50 elementary bodies, if we include the imponderable agents, chlorine, and some other analogous substances; and the newly discovered bodies, *bromine*, *pluranium* and *thorium*.

These may be comprehended under two grand divisions; I. *Imponderable agents*, or such as have no known weight; as

Caloric,
Light,
Electricity,
Magnetism.

II. *Ponderable bodies*, or such as have known weight; these may be divided into four classes. Class 1. *Supporters of Combustion*; as oxygen, &c. Class 2. *Combustibles not metallic*; as hydrogen, &c. Class 3. *Metal-*

loids ; as silicon the base of *silex*, calcium of *lime*, &c. Class 4. *Metals* ; as gold, silver, &c.

Language of Chemistry. Among the most important chemical agents is *oxygen*, the discovery of which wholly changed the aspect of the science and gave rise to our present nomenclature, or names of substances. The term *combustible*, considered as synonymous with *oxygenable*, is applied to all simple substances which can be made to unite with oxygen ; this union is accompanied with a disengagement of caloric or heat (though in some cases imperceptible,) and often of light ; the substance which has thus united with oxygen is said to be *burnt*, or *oxygenated*.

The compounds which result from the union of oxygen with simple bodies have received the name of *oxides* and *acids*. When oxygen unites with a body but in *one proportion*, forming either an oxide or an acid, the substance with which it combines is termed its *radical* ; as in the *oxide of zinc* ; here zinc is the radical or base of the oxide. If the oxygen combines in *two or three proportions*, the first oxide is called *protoxide*, the second *deutoxide*, the third *tritoxide*. When a body is oxidized in the highest degree, it is termed the *peroxide* ; for example, the combinations of oxygen and manganese, which present us with all these varieties of oxides.

A similar rule governs with respect to the names of acids ; if the oxygen forms but one acid, to its radical is added the termination *ic*, as boracic acid. But if oxygen combines in several proportions, the lowest proportion is expressed by *ous*, and the highest by *ic* as sulphurous and sulphuric acids ; to these terminations, are also added *hyper*, which signifies more, and *hypo*, less ; thus hypsulphurous acids denotes a body possessing a less quantity of oxygen than sulphurous acid, &c.

Oxygen is not the only agent which unites to combustible bodies to produce acids ; hydrogen, chlorine, with some other substances, possess this property ; thus we have *hydrochloric* and *hydriodic acids*, resulting from the union of *hydrogen* with *chlorine* and *iodine*.

When too binary,* burnt substances combine, a new

* The term *binary* is derived from *bis*, two ; a binary compound

compound results, which when the constituents are an acid and a metallic oxide, is called a *salt*. The salts are very numerous; they are named by varying the termination of their acid; when the acid terminates in *ous* and *ic*, the salts end in *ite* and *ate*; thus by the term *sulphate of tin*, we understand the combination of tin with *sulphuric* acid; *suiphite of tin* expresses the combination of the metal with *sulphurous* acid.

IMPONDERABLE AGENTS. 1. *Caloric*. It would not be possible to explain the sensation of heat to one who never experienced it, any more than we could by words give to the blind an idea of colors, or to the deaf, of sounds. A person says, '*I am warm*,' or extending his hand to a fire, says '*the fire is hot*;' in the first case he properly expresses *the sensation of heat*; in the second, the *cause of this sensation*. The fire itself is not supposed to be hot, but only to possess the property of producing in the animal system, the sensation of heat. The *cause of heat* is distinguished from *heat* by the term *caloric*.

2. *Light*, as is well known, proceeds from the sun and the fixed stars, as *direct sources*; from the moon and other planets by *reflection*, and from various terrestrial substances, while experiencing combustion from phosphorescent matter, &c. The nature of light and caloric is at present unknown; from the intimate connexion between them, they have by some been considered only as modifications of the same substance.

Among the most important properties of caloric are, 1, its tendency to an equilibrium; 2, its power of dilating bodies; 3, its susceptibility of being reflected from one body to another; 4, its power of increasing chemical action.

3. *Electricity*. From whence arises the peculiar sensation which is experienced when a piece of zinc placed upon the tongue, is brought in contact with a piece of copper placed under this organ? What power was that which, under the eyes of Galvani, animated the

is one in which but two elements are united; a *ternary* compound consists of three elements; a *quaternary*, of four, &c.

limbs of a dead frog, when two metals, placed at the extremity of a naked nerve, were made to communicate by means of a metallic wire? What dazzling brilliancy flashes in the skies, or darts downward upon earth, fraught with terror and destruction? It is the *electric fluid*. But what is the nature of this fluid which divides the material world into two great masses, the *positively* and *negatively electrified*? Is it simple or compound? Why is its presence so uniformly accompanied with light and heat? Are light and caloric anything more than modifications of this fluid, and is not electricity indeed the union of these two substances? Electricity, whatever it may be in itself, exercises an important influence in chemical changes. The instrument called the *voltaic pile*, causes the decomposition of a compound body, which is submitted to its action; the elements possessing the *positive electricity*, go to the *negative pole*,* and those which have the *negative electricity* go to the positive pole of the pile.

4. The *magnetic fluid* gives to a mineral called the load-stone (deutoxide of iron) the property of directing its two extremities, either to the north or south pole of the earth; of attracting by its northern extremity the southern extremity of another magnet, while it repels its northern extremity or pole. It has recently been discovered that the magnetic needle changes its direction under the influence of the voltaic pile; that the conducting wires communicate magnetic properties to steel and iron wires. It has therefore been conjectured that magnetic attraction is but another modification of electricity. If these suggestions are founded in truth, we may perhaps regard all the imponderable agents as the result of one grand agent.

PONDERABLE SUBSTANCES.

Class 1. Supporters of Combustion. All substances upon the globe except those already described under the

* The two extremities of a voltaic battery are called *poles*; this instrument was first called the Galvanic battery, from Galvani; afterwards, on being modified by Volta, it received its present name.

head of imponderables, are known to possess weight; the specific gravity even of the lightest gases have been ascertained. After the discovery of oxygen, this gas was for some time considered as the only supporter of combustion, or the only substance which, by uniting with others, could produce the phenomena of combustion. At present *four* other analogous substances are ranked with oxygen viz. *chlorine, iodine, fluorine, and bromine*. When any one of these substances, existing in a binary compound, is submitted to the action of the voltaic pile, the supporter of combustion goes to the positive, and the combustible to the negative pole.

1. *Oxygen* unites with almost all substances, forming acid and oxide compounds; its name is derived from the Greek, and signifies to generate oxides; these and most of the acids being under the influence of this agent. Its properties are very numerous, since its combinations exist in most bodies in the three kingdoms of nature. It has been observed by a celebrated chemist, that '*Oxygen may be considered as the central point, around which chemistry revolves.*'

The phenomena of combustion bear an intimate relation to oxygen; so that the slightest union of this gas with another substance, although neither accompanied with sensible heat or light, is considered as a low degree of combustion. Stahl supposed that the fire exhibited in combustion was occasioned by the loss of an imaginary substance, which he termed *phlogiston*, or the principle of heat. Lavoisier proved the materiality of oxygen, by showing that it was absorbed by the burnt substance; but neither of them accounted for the heat produced at the moment of combustion, nor for the luminous appearance or flame which accompanied it.

By observing the usual circumstances of kindling a fire, we perceive that the temperature of the combustible body is first increased by a borrowed heat. Now it is known that electricity is developed by an increase of heat, and that a union of the two electric fluids causes an elevation of temperature: thus, when the caloric is first added, the two electricities are brought forth; the negative from the oxygen, and the positive from the com-

combustible substance; and the union of these two electricities is supposed to produce the heat which attends combustion. When we assist combustion by the action of the bellows, we direct a current of air upon the combustible substance; the oxygen being impelled upon its surface, the fire becomes more intense. By repeating the action of the bellows, we successively elevate the temperature, until the combination of the two electricities is sufficiently energetic to give rise to *flame*. The importance of oxygen as a supporter of combustion, is manifested by various experiments;—even metals inflame and burn spontaneously in this gas.

2. *Chlorine* was formerly called *oxymuriatic acid*, from its supposed constituents, *oxygen* and *muriatic acid*. It is at present, by the French and most English chemists, regarded as a simple substance; and muriatic acid is now called *hydro-chloric acid*, being, as it is supposed, a combination of *hydrogen* and *chlorine*. Chlorine may be obtained by heating the pulverized peroxide of manganese with hydro-chloric acid; the hydrogen of the latter uniting with the oxygen furnished by the manganese, disengages its chlorine in the form of a yellowish green gas. Chlorine forms with oxygen several acids, as *chloric*, *oxygenated chloric*, &c. Its union with metals produces *chlorides*; these dissolved in water are *hydro-chlorides*.

3. *Iodine*, at the common temperature, exists in a solid form; its color is a bluish gray; by heat it becomes a violet colored gas; it forms with oxygen, *iodic acid*, and with hydrogen, *hydriodic acid*; combined with sulphur phosphorous, and with metals, it forms *iodides*. Iodine is obtained from sea-weeds, mineral waters, minerals and sponge.

4. *Fluorine* is considered as the base of fluoric acid, but as its actual existence has not been proved, it must be regarded in the light of an imaginary substance. Whether fluoric acid consists of oxygen united to the combustible base fluorine, or whether, as is supposed by some, this base is united to hydrogen, (hence the term *hydro-fluoric*, instead of fluoric acid,) seems not yet determined. This acid united to lime, constitutes the

fluates of lime, or the beautiful Derbyshire spar: with other bases it forms various *fluates*.

5. *Bromine*, which has been recently discovered and added to the list of simple substances, is obtained from sea-water and the ashes of the same marine plants that furnish iodine; it is a dark red liquid, so volatile as at the common temperature to throw off red vapours; with oxygen it forms *bromic acid*, which, uniting with various bases, forms *bromates* and *bromides*.

Combustible Substances. Combustible substances are such as possess the property of uniting with oxygen and other supporters of combustion to form *oxides* and *acids*; they may be divided into the following classes:

COMBUSTIBLES NOT METALLIC.

METALLOIDS.

METALS.

PONDERABLE SUBSTANCES.

Class 2. Combustibles not metallic.

1. *Hydrogen* is a term derived from the Greek, signifying to produce water, because this liquid is formed by the combination of hydrogen with oxygen: in the language of chemistry, water is the *protoxide of hydrogen* (or hydrogen with one proportion of oxygen;) when another proportion of oxygen is added, it becomes a *dentoxide of hydrogen*, or oxygenated water. Hydrogen combined with oxygen and carbon exists in all vegetable matter; by the addition of nitrogen we have the constituents of animal substances. Hydrogen forms acids known by the general name of *hydracids*; with chlorine it forms hydrochloric, with iodine hydriodic acids, &c. with sulphur, carbon, &c., it forms sulphuretted hydrogen or hydrosulphuric acid, carburetted hydrogen, &c. It is highly combustible, and burns with much flame, furnishing, by its union with carbon, the gas used in cities for lighting streets, shops, &c. On account of its being specifically lighter than atmospheric air, it is used for inflating balloons.

2. *Boron*, combined with oxygen constitutes the base of *boracic acid*; it is by the decomposition of this acid that boron is obtained, it being never found pure in nature.

3. *Carbon*, when pure and crystallized, constitutes the diamond : it exists in charcoal with hydrogen, salts, and other products of combustion, and may be obtained from this combustion. Many attempts have been made to crystallize carbon, in order to obtain diamonds, but hitherto none have been successful. With a certain proportion of oxygen, carbon forms *carbonic acid* with a less proportion of oxygen, the oxide of carbon, or carbonic oxide gas.

Carbon forms, with hydrogen, *carburetted hydrogen*, or gas light ; with the alkalies it forms *carbonates*, as carbonate of lime, (marble,) carbonate of soda, &c. A peculiar property of carbon is that of absorbing putrid miasmata, or gasses ; a knowledge of this fact has given rise to some important applications to culinary operations, medicine, &c.

4. *Phosphorus* has received its name from two Greek words,* signifying to bring light, this substance being always luminous in the air. With oxygen in different proportions it forms phosphoric acid, phosphorous acid, hypophosphorous acid, and oxide of phosphorus. With hydrogen it forms phosphuretted hydrogen, which inflames spontaneously in the air, producing the chalcidous, or *ignes fatui*, which appear about burying-places and marshes. Bones and other animal-substances when decomposing, disengage oxygen, phosphorus, and hydrogen ; these united form phosphuretted hydrogen, which being specifically lighter than the atmosphere, ascends, and by its spontaneous combustion produces those luminous vapors, which the superstitious and ignorant have referred to supernatural causes.

5. *Sulphur*, united to oxygen, forms *sulphuric* and *sulphurous acids* ; these acids, united to bases, form *sulphates* and *sulphites*. With hydrogen, sulphur forms *sulphuretted hydrogen*, and with the metals, various *sulphurets*, as sulphuret of lead, &c.

6. *Selenium* is less known than any of the non-metallic combustibles ; it forms with oxygen *selenic* and *selenious acids* and the oxide of selenium. Selenious acid

* *Phos*, light, and *phero*, I carry.

forms, with bases, salts called *selenites*; selenic acid forms salts called *seleniates*.

7. *Nitrogen*,* when first discovered was called *azotic*, which signifies a depriver of life; this term appearing objectionable, as it is not a direct destroyer of life, that of nitrogen has been given from the circumstance of its being an essential ingredient in nitric acid. Nitrogen combines with oxygen in five different proportions, forming

Protoxide of Nitrogen,
Deutoxide of Nitrogen,
Hypo-Nitrous Acid,
Nitrous Acids,
Nitric Acid.

With hydrogen it forms *ammonia*; with carbon, *cyanogen*; with chlorine and iodine, a *chloride* and an *iodide*. The compound substance *cyanogen* (signifying by its name the *generator of blue*) is the base of *prussic acid* (*hydrocyanic acid*;) which, uniting to iron, forms the color called *prussian blue*.

PONDERABLE SUBSTANCES.

Class 3. The Metalloids, or Earthly and Alkaline Combustibles.

The termination *oids* is from the Greek, and signifies *like* or similar; thus the term *metalloids* denotes *like metals*. The substances comprehended in this class are, in the strictest sense, metals; but they differ from other metals in their strong affinity for oxygen, which renders it extremely difficult either to obtain or preserve them in a state of purity. It is but recently that they have been known to exist; potash, soda, lime, &c., were considered as pure alkalies, until Davy, by means of the voltaic pile, decomposed potash, and obtained a metal and oxygen; the metal he called *potassium*: thus it was discovered

* In giving nitrogen a place among combustibles, it must be understood that it is not combustible in the common acceptation of the term, as it does not take fire upon being brought in contact with a burning substance; but it is combustible in the chemical sense of the term, since it unites with oxygen and other supporters of combustion.

that potash is not an elementary substance but an *oxide of potassium*. Reasoning from analogy, Davy and some of the French chemists were led to believe that soda, lime, and other alkaline substances, had metallic bases: a series of brilliant and convincing experiments have now established this fact. Metals of this class seem naturally divided into two sections.

Section 1. *Earthy metals*, or metals which are the bases of earths; these are

Silicon, the metal of Silex,	
Zirconium, " " "	Zirconia,
Aluminum, " " "	Alumine,
Yttrium, " " "	Ytria,
Thorium, " " "	Tharine,
Glucinum, " " "	Glucina,
Magnesium, " " "	Magnesia.

Section 2. *Alkaline metals*.

Calcium, the metal of Lime,	
Strontium, " " "	Strontian,
Barium, " " "	Barytes,
Sodium, the metal of Soda,	
Potassium, " " "	Potash,
Lithium, " " "	Lithia.

Class 4. *Metals*.

This class contains substances which have in general less affinity for oxygen than the metalloids; many of them, such as silver and gold, cannot be easily oxidated; iron unites much more readily with oxygen, as may easily be perceived by exposing any iron vessel to the action of the atmosphere; in a short time it will be found *rusted*, according to the common term, but which chemically is said to be oxidated, the metal having combined with oxygen from the atmosphere. Any article of gold or silver is not thus acted upon by the atmosphere, nor even by water, which iron soon decomposes, by uniting with its oxygen.

We find, then, in examining the classification of elements or simple substances,

Imponderable bodies,	4
Supporters of Combustion,	5
Combustibles not metallic,	7
Metals including metalloids, about	40*

Binary Compounds.

Binary compounds (from *bis*, two) are such as are formed by the union of two simple substances; these compounds are of three kinds; 1st, those which are neither *oxides* nor *acids*; 2d, *oxides*; and 3d, *acids*.

The binary compounds, which possess neither the properties of acids or oxides, are to be found in the union of the simple combustibles among their own class; as, *carburetted hydrogen*, consisting of carbon and hydrogen; *cyanogen*, of carbon and nitrogen; *chloro-carbonous gas* of chlorine and carbon. Sulphur with bases forms binary compounds, called *sulphurets*. *Steel* is a binary compound, formed of carbon and iron. Oxygen in one, two, three, and even four proportions, forms a great variety of binary compounds; as with sulphur it forms in the highest proportion sulphuric acid, in a lower proportion it forms sulphurous acid, &c. The most important acids are mostly binary compounds.

With the metals, oxygen forms *oxides*, *protoxides*, &c. There are eight non-metallic oxides, viz.

The Protoxide of Hydrogen, or water,
 Peroxide of Hydrogen,
 Oxide of Phosphorus,
 Oxide of Carbon,
 Oxide of Chlorine, or Euchlorine,
 Protoxide of Nitrogen, or Exhilarating Gas,
 Deutoxide of Nitrogen,
 Oxide of Selenium.

The metallic oxides are very numerous; the peroxide of manganese is of great importance in chemistry, it being used for procuring chlorine oxygen, &c. The deutoxide of iron possesses magnetical attraction; it is called the load-stone or magnet. The deutoxide of lead is commonly known by the name of white lead. With the earthy and alkaline metals, oxygen forms various oxides; as the oxide of silicon or silex, the oxide of calcium, or lime; the oxide of sodium, or soda; the oxide of potassium, or potash, &c.

* For the arrangement of metals and their properties, see Dictionary of Chemistry—article *Metals*.

Acids.

Acids are distinguished by a sharp and pungent taste : they change vegetable blue colors to red, and combine with metallic oxides to form salts, or to alkaline oxides (as soda and potash) in order to neutralize or be neutralized by them. It was long believed that the acidifying power was confined to oxygen : hydrogen is now supposed to possess this property : thus the acids are now divided into *oxacids* and *hydracids*. The oxacids are numerous ; some of the most important are,

Nitric Acid,	composed of	Nitrogen and Oxygen,
Sulphuric Acid,	" "	Sulphur and Oxygen,
Carbonic Acid,	" "	Carbon and Oxygen.

There are four hydracids, viz. hydro-sulphuric, (usually called sulphuretted hydrogen,) hydriodic, hydrochloric, and hydro-selenic.

Quaternary Compounds.

Salts. Salts are compounds of oxides with acids : as the acids are binary compounds, the salts are of course quaternary or quadruple combinations : they are of three kinds ; 1st, neutral, presenting neither acid or alkaline properties ; 2d, with *excess of oxide* ; 3d, with *excess of acid*. The salts are divided into genera, each genus consists of the combination of one acid with various oxides, and is subdivided into three series, *neutral*, *super* (over), and *sub* (under.) In all salts of the same genus, and at the same degree of saturation, the quantity of acid is to the quantity of oxide in a uniform proportion.

Genera of Salts.

Borates. The most important species is the *sub-borate of soda*. It is found in some lakes.

Carbonates. This genus is distinguished by being decomposed with effervescence, owing to the escape of carbonic acid. Among the most important species of this genus are *carbonate of lime*, consisting of chalk, limestone, &c. ; *sub-carbonate of soda*, commonly called soda ; *carbonate of ammonia*, produced by the decomposition of animal matter ; *carbonate of iron*, a valuable mineral ; *carbonate of copper*, of various colors, as blue, green, &c. ; *carbonate of lead* is white lead ; *sub-carbonate of potash* is the potash of commerce.

Phosphates. In this genus is the *phosphate of lime*, which forms an important part of the bones of animals, and is used for the manufacture of phosphorus. *Phosphate of cobalt*, by calcining with alum, forms a beautiful color, called *Thenard's blue*.

Sulphates. The most common species which exist in nature are those of lime and barytes. *Sulphate of Lime* is gypsum, or plaster of Paris. *Sulphate of Magnesia* is Epsom's salts. *Sulphate of Potash.* Alum is a double sulphate of potash and alumine. *Sulphate of Soda* is Glauber's salts. *Sulphate of Iron*, combined with nutgalls, forms ink. *Sulphate of Copper* (Deuto) is copperas, or blue vitrol.

Nitrates. But three species of this genus are found in nature. *Nitrate of Potash* is saltpetre; it is of important use in the manufacture of gun-powder. *Nitrate of Bismuth* is used in the manufacture of pearl white. *Nitrate of Silver* is lunar caustic.

Chlorates. None of this genus are found native. It contains the *Chlorates of Potash* (oxymuriate of potash,) soda, lime, &c. Hydro Chlorates were formerly called *muriates*. When crystallized or dried, they lose the hydrogen of their acid, and become *chlorides*; these in their turn, when dissolved in water, form *hydro-chlorates*. *Hydro-chlorate of lime* (muriate of lime) is of use in medicine and in chemical experiments. *Hydro-chlorate of ammonia* is manufactured by the reaction of marine salt upon the sulphate of ammonia.

*Chlorides.** There are many metallic chlorides, as chlorine has a strong affinity for metals. *Chloride of Calcium* is distinguished by having affinity for water. *Chloride of Sodium* is common salt; its properties are known in all civilized countries. *Chloride of Soda* has of late been found useful in removing offensive gases from the atmosphere, and preventing infection from sick persons or dead bodies. The chlorine is supposed to decompose the noxious exhalations, by uniting with the elements of which they consist, particularly the hydrogen. *Chloride of Lime* is commonly called bleaching powder; its properties are not unlike those of the chloride of soda. *Chloride of Mercury* is subdivided into the *bi-chloride* (deuto-chloride) which is corrosive sublimate, and the *proto-chloride*, which is calomel. There are many other important species in this genus, as the *chlorides of manganese, iron, silver, &c.*

Hydriodates. But one species of importance is known, viz. the *Hydriodate of Potash*.

Chromates. The most important species is the *Chromate of Lead*, which is of a beautiful yellow. There are other genera of salts, as the *nitrites, sulphites, phosphites, &c.*, which are formed by combinations of nitrous, sulphurous and phosphorus acids with bases; the properties of these, although in many respects differing from the salts formed with the higher acids, are not in general very dissimilar.

The organic kingdom furnishes an almost infinite variety of important compounds; *vegetable acids* are very numerous; the *acetic, tartaric, oxalic, malic, kinic, &c.* are all of use in medicine and in the arts. Among

* The chlorides, although mentioned here, are not proper salts; they are analogous to oxides, iodides, and bromides.

the *vegetable alkalies* are *morphia*, the narcotic principle of opium, *cinchonia* and *quina*, extracts of the Peruvian bark, with many others. Oils, resin, wax, alcohol, ether, sugar, starch, tannin, lignin, and various coloring substances, are all products of the vegetable kingdom. Salts are formed by the union of the vegetable alkalies with acids, as the *sulphate of quinine*, of *morphine*, &c.

Animal Chemistry presents a new set of compounds, as fibrin, gelatine, acids, and oils; it investigates the compounds of all animal matter, as bones, teeth, blood, and the various secretions; and traces all those to their final or ultimate elements, oxygen, hydrogen, carbon, and nitrogen.

Chemistry takes a wider range than any other department of Physical Science; in the mineral kingdom it penetrates the hardest materials, and inquires into the nature of their elementary constituents. In the vegetable substances, chemistry with scrutinizing glance detects their medicinal and nutritious qualities: do these require to be separated from their various combinations, this almost magic art can disentangle and set them free. In the animal kingdom, chemistry performs a high and solemn office, teaching proud man himself, that his own material frame, beautiful in its aspect and noble in its bearing, is in truth but a compound of a few simple elements, which, as they have previously existed in other combinations, will again be dissipated to become parts of the worm that 'feeds sweetly' upon the decaying body, and of the noisome weed or lowly plant, that springs from the soil which covers his earthly remains.

History of Chemistry.

The term chemistry is by some supposed to be derived from the Greek word *kemia*, or the Arabian *chamia*, which signify to burn; and that this science at first signified the examining of substances by fire. By others, the word chemistry is supposed to have been used by the Egyptians in a sense equivalent to the present meaning of the term *Natural Philosophy*. Science among the

Egyptians, was for a long time confined to the wise men, or *magi*, who carefully concealed their knowledge from the people. Plutarch supposes that the study of nature, for this reason, was called chemistry, which word in his opinion signified the *secret science*. Whatever might have been the degree of knowledge of nature possessed by the Egyptians, they were probably acquainted with the most important facts on which the science of chemistry is founded.

The Israelites gained from the Egyptians some knowledge of the art of working metals, and of dyeing red, blue, purple and scarlet. The Phœnicians are supposed to have understood the manufacture of glass, perfumes, and imitations of precious stones. This knowledge was successfully communicated to the Carthaginians and Greeks, and by them to the Romans; the two latter people seem, however, to have possessed but a very limited knowledge of any chemical operations, or any branch of analytical science. Plato seemed sensible of this when he makes an Egyptian priest say to Solon, 'You Greeks will be always children; for you have neither the antiquity of knowledge, nor the knowledge of antiquity.' The religious belief of the Greeks and Romans, may afford some excuse for their ignorance of nature: who among them would have dared to take water from a fountain or a river, and decompose it by fire? They would consider it as a sacrilege against the Naiad, or the protecting divinity of the stream: the grand priest would have exclaimed against the impious wretch, and the people in their indignation would have torn him to pieces.

Although the Egyptians were idolaters, yet less imagination was mingled with their religious belief; and free from many of the superstitions which kept other nations in intellectual bondage, they dared to look into the secrets of nature. Pliny the elder, places the Egyptians as first in the knowledge of the sciences. Democritus of Thrace, who flourished 500 B. C. travelled into Chaldaea, Persia and Egypt: in the last country he gained a knowledge of chemistry that appeared to Pliny almost super-human; and yet this classical and venerable land

has transmitted to us scarce a vestige of any discoveries! But we cease to be surprised at this, when we reflect that the library of Alexandria, which contained their treasures of knowledge, was successively destroyed by the victorious Romans and Mahometans.

Science, driven from Egypt, Greece, and Rome, in the 4th century; took refuge in Arabia, and chemistry appeared under the name of *Alchemy*.

The alchemists imagined that gold existed in all metals; and it was their great object to ascertain the manner in which it might be separated from its combinations, and obtained pure: they expected to find some substance which would enable them to perform this great operation: this imaginary substance, which some pretended to have discovered, was called the *philosopher's stone*. Those who studied alchemy pretended to great secrecy, affirming that some heavy calamity would fall upon any one who should reveal the principles of the science; keeping themselves separate from the world, they invented mysterious characters, by which the initiated could hold correspondence without danger of discovery.

Among the alchemists, notwithstanding the folly of their pursuit, and the baseness of their deceptions, we find the names of a few distinguished for talents and learning. *Albert the Great*, a German, who lived in the 12th century, wrote a work upon alchemy, in which he described the chemical process then in use. His treatise on metals was written with clearness, and showed a mind familiar with many of the phenomena of nature. His countrymen astonished at the extent of his knowledge, accused him of magic, and threw him into prison. His pupil, Thomas Aquinas, wrote upon alchemy, and for the first time the word *amalgam* was introduced into chemistry. In his writings, astrology and alchemy were united.

In England, contemporary with Albert the Great, was *Roger Bacon*, the most enlightened and judicious of all the alchemists. In his treatise '*De mirabili potestate artis et naturæ*,' (the wonderful power of art and nature,) he protested against the foolish belief in magic,

charms, and necromancy; he asserted that superstition tyrannized over the human mind through ignorance of natural phenomena. He was acquainted with the *camera obscura*, telescope, and the use of gun-powder. Notwithstanding he carefully concealed his labors, he was accused of magic, and imprisoned. *Raymond Lully* treated of the preparations of acids and phosphorus.

About the middle of the 12th century, *Arnold de Villa Nova*, a physician, consulted by kings and popes, directed alcohol and the oil of turpentine to be used in medicinal preparations. John and Isaac Holland published several treatises on chemistry, with plates representing the apparatus which they used. They made experiments upon human blood, which have aided the most recent discoveries. They invented the art of enamelling and coloring glass and precious stones.

Basil Valentine, a German monk, taught that all substances were composed of salt, sulphur and mercury: he was the first who applied chemistry to medicine. The most important of his works was called '*Currus Triumphalis Antimonii*,' (triumphal chariot of antimony;) in this he gave such an account of his experiments with this metal, as excited an interest among all the physicians of Europe.

An opinion had long prevailed among the alchemists that a medicine might be discovered which should be an universal cure or *panacea** for all diseases; some asserted that this could be found in the philosopher's stone, which not only converted metals into gold, but, among other extraordinary virtues, possessed the power of rendering man immortal upon the earth.

Of all the alchemists, none appear to have pretended to so many discoveries as *Paracelsus*, a native of Switzerland, born in 1493. He confidently boasted that he was in possession of an elixir which would render him immortal, but he died in the prime of life, leaving his followers overwhelmed with shame and dismay. The last of the alchemists was *Van Helmont*, who boasted of

* This term is derived from two Greek words, *pan*, all, and *akos*, medicine, signifying to cure all.

being in possession of the universal remedy to which he gave the name of *alkahest*.

The alchemistical system crumbling into ruins, chemistry, like the fabled Phœnix, arose from its ashes. *Beccher*, a professor of medicine in Germany, taught that the earth was not a simple element, but a combination of elements; he attempted to establish chemistry on its true basis, that of analysis: his experiments were of great use to succeeding chemists.

Stahl, the pupil of *Beccher*, remodelled and simplified the theory of his predecessors, attempted to explain the process of combustion, and to reduce the phenomena of chemistry under a certain number of heads. His theory of combustion supposed that a certain substance, which he called *phlogiston*, formed a part of all combustible bodies, and that its separation constitutes fire. On account of the boldness of his investigations, he was called the sublime *Stahl*. He is the first chemist who appeared to have any clear ideas of chemical affinity; he even suggested the theory of *double elective attraction*.

At this period many learned men were engaged in chemical pursuits, and the science was enriched by the discoveries of *Boyle*, *Agricola*, *Glauber*, *Kunckel*, *Libavius*, *Bohnius*, *Lemery*, and others.

Boerhave, an accomplished philosopher and celebrated physician, published a system of chemistry in 1732, which contained a more ample collection of chemical experiments, and more clear and precise directions for repeating them, than any previously offered to the world. He gave an account of vegetable analyses, more simple and scientific than any which had before appeared.

Notwithstanding all these improvements, chemistry was yet in a very imperfect state; some of the absurd notions of the alchemists still remained, and loose and unsatisfactory reasonings, founded on vague analogies, were employed. It was not for a common mind to attempt to remove the shackles of prejudice which ages had been riveting upon the human intellect. At this time appeared *Bergmann*, a man gifted with a quick and discriminating genius, a moral courage that could look

above 'the world's dread laugh,' and a devoted enthusiasm for the science of chemistry.

With a true analytical method he scrutinized nature, with a view to ascertain her laws of aggregation; he arranged the well-known tables of *elective attractions*, and published many important experiments upon volcanic products. The clearness of his conceptions, the accuracy of his observations, and the methodical arrangement which he introduced into the science of chemistry, entitled Bergmann to a rank among its greatest benefactors. A native of the same country, and contemporary with Linnæus, it was his high destiny to labor with almost equal success in the cause of natural science. While Linnæus was investigating the external forms of nature, with a view to the systematic arrangement of the animal, vegetable, and mineral kingdoms, Bergmann was analyzing and arranging the elements of which they are composed. With the frankness and generosity which marks a noble mind, he sent to Linnæus an account of his experiments and observations. The latter equally generous, forwarded Bergmann's communications to the academy of Stockholm with this inscription, '*Vide, et obstupui* (I have seen, and am amazed).

Scheele, the pupil and friend of Bergmann, enriched chemistry with new and important facts: he died in 1786, two years after the death of his predecessor; his name is commemorated in that of a compound of copper and arsenic, (arsenite of copper) called *Scheele's green*. By a late distinguished chemist,* he is called the Newton of chemistry.

Soon after the death of Bergmann and Scheele, a series of splendid discoveries marked the advancement of chemical science in Great Britain. Dr. Black discovered the existence of latent caloric, and that limestone is a compound of lime and an *aerial fluid*, which he called fixed air, now called *carbonic acid gas*. This discovery gave rise to *pneumatic* chemistry, or that branch of the science which relates to gasses.

* Thomson.

Mr. Cavendish soon after this discovered *hydrogen gas*. In 1770, Dr. Priestley commenced a series of pneumatic discoveries: he observed that by heating certain metals a kind of air was obtained, much purer than the atmosphere, and in combustible substances with great brilliancy. It is scarcely necessary to say that this was *oxygen gas*.

While the science of chemistry was receiving these important acquisitions in one part of Europe, Lavoisier in France had already commenced his brilliant career, and opened to his countrymen that pathway to scientific distinction, which so many have since pursued with almost unrivalled success. Lavoisier found that the recent discoveries with respect to gasses could not be reconciled with the phlogistic theory of combustion; and after years of patient and laborious investigation, he published the grand theory which considered oxygen as the supporter of combustion. This theory at first met with general opposition, but gradually gained supporters until Cavendish, Berthollet, Black, Morveau, Fourcroy, and Kirwan, (the latter of whom had strongly opposed it) were found among its disciples.

In 1787, Lavoisier, Fourcroy, Berthollet, and Guyton de Morveau, were appointed by the French academy to decide upon a nomenclature of chemistry: with great care and research they formed that, which is now the almost universal language of the science.

Great Britain may boast of many distinguished modern chemists; of Davy, the powerful advocate of the chloridic theory, and the inventor of the safety lamp; Murray, Brande, and Thomson, with many others, whose labors have enlightened the present age, and whose works will render their names familiar to succeeding generations.

On the continent, Berzelius, Vauquelin, Berthollet, Gay-Lussac, Thenard, Dumas, Dulong, Pelletier, and others, have carried their researches and analyses to a degree of accuracy and clearness hitherto unrivalled. The year 1829 is memorable for the loss sustained by science, in the death of one of her most distinguished

votaries; but long will the halo of glory encircle the venerated names of Vauquelin and Davy.

In America, Franklin, fearlessly encountering the lightning from heaven, proved its identity with electricity, and taught mankind to guard against this awful agent of destruction. Hare, Silliman,* Eaton, with other veterans in the science, and less experienced chemists, are interrogating nature with a brighter prospect of discovery than that which encouraged the efforts of their predecessors: for, as the field of discovery and improvement is infinite, in proportion as facilities for them are multiplied, so are the motives for exertion. As correct would it have been, at the period when earth, fire, and water were considered as the *four elements* of nature, for an investigating mind to have rested in this belief, as at this day to suppose that we have arrived at the maximum of human knowledge, or have already learned as much of the properties of nature as its Almighty Creator wills that we should know.

From the nature of *chemical experiments*, which in most cases require either firmness of nerve, unshrinking courage, or physical strength, and sometimes all these qualities combined, woman may not aspire to add to the stock of chemical science, discoveries of her own; but, gifted with the intellectual power to trace the relation of cause and effect, and comprehend the wonderful properties of matter which science reveals, she may dare to raise the curtain which conceals the operations of nature, and, entering her laboratory, behold the grand experiments there exhibited: nor should it be considered a small privilege that she is permitted to share in the sublime discoveries of science, and to feast on the banquet of knowledge, prepared by others.

Is it not more noble for an immortal soul thus to employ itself in learning the second causes by which the Deity operates in the material world, than to waste the precious hours of existence in dreaming over sickly

* Perhaps no chemical work has ever been published, which exhibits objects of the science in a clearer light than Professor Silliman's late work on chemistry.

works of fancy? Can the admirers of sublimity and beauty find none in the study of nature? or can the lover of the marvellous find no wonders in her operations? There is in chemistry, poetry to satisfy the most extravagant fancy, and in the sublime truths of the science are mysteries far surpassing the boldest conceptions of human genius.

LECTURE XVII.

Natural History.—Zoology.

IN the study of nature, we become familiar with the works of God; we contemplate the heavens above, the materials of the earth beneath, the objects around us, and we feel that they must have had a divine author. Whether we view the works of nature on a large scale, as exhibited in the more magnificent parts of creation, or with microscopic eye examine the structure of a crystal, an insect, or a blade of grass, we are alike struck with wonder and awe; we bow in adoration to Him for whose comprehension nothing is too great, and whose minute providence is over all, even the least of his works. The study of nature has a tendency both to humble and exalt man in his own eyes. When he compares his own powers, physical and mental, with that *omnipotence* which the works of nature manifest, he feels that he is 'less than nothing and vanity;' but when he finds within himself faculties capable of investigating the properties of these wonderful objects, of arranging them in classes, of discovering their laws of organization, and of decomposing them into their original elements, he feels himself ennobled; he realizes that these faculties must be those of a soul capable of still higher attainments. It is indeed salutary to hold converse with the works of God, the volume of nature which has been emphatically termed, 'elder scripture writ by God's own hand.'

We have observed that all material bodies, all animals, plants, and minerals, are subject to chemical observations and experiments ;—but for this, they must be pulverized, dissolved, distilled or melted. By a series of these processes, the chemist arrives at the knowledge of the elements which compose the various bodies, organic and inorganic, which he meets with.

In Natural History, a term which comprehends Zoology, Botany, and Mineralogy, we view animals, plants, and minerals, as they exist in their complete state : we observe their external forms, and the various changes which nature produces in them. The first object of the naturalist is to know the productions of nature, and to distinguish the various kinds or species from each other. The next is the arrangement of these species under more general divisions, and again to simplify these divisions, until, under a few classes, he arranges the almost infinite variety of animal, vegetable and mineral productions.

Zoology.

The term zoology is derived from the Greek *zoe*, life, and *logos*, discourse : this science examines and classes those organized beings which are termed animal. The distinction between animal and vegetable life is not, in all cases, so clear as might be imagined, yet in general it is sufficiently apparent. ‘The animal has the power to move about, and to seek the nourishment most agreeable ; it utters audible sounds, and possesses sensation and apparent consciousness. The plant, on the contrary, is confined to a particular spot, having no other nourishment than substances which themselves come in contact with it ; exhibiting no consciousness, nor to common observation any sensation. It is only when we examine with close attention the various phenomena in the vegetable and animal kingdoms, that we learn to doubt as to the exact boundaries by which they are separated.

For a general view of the science of zoology, I shall avail myself of the sketch appended to the ‘View of Nature’ in my Lectures on Botany. One great distinction

in the animal kingdom is with respect to the *vertebræ*, or back bones; such animals as have these, are called *vertebral*, such as have not, are called *avertebral*.

There are *four* great families of *vertebral animals*, viz.

1. *Quadrupeds*. The science of which has no popular name. This family includes only four-footed animals; as ox, dog, mouse.

2. *Birds*. The study of which is called ornithology, from *ornis*, a bird, and *logos*. This family includes the feathered tribe; as pigeon, goose, wren.

3. *Amphibious animals* (from *amphi*, both, and *bios*, life, signifying to live in two ways.) The science which treats of these is called amphibiology: it includes those cold-blooded animals which are capable of living on dry land, or in the water; as tortoise, lizard, serpent, frog.

4. *Fishes*. The science of which is called *ichthyology* from *ichthus*, a fish, added to *logos*. It includes all aquatic animals which have gills and fins; as shad, trout, sturgeon, eel.

The *avertebral animals* are divided into two classes.

1. *Insects*. The science of which is called *entomology* (from *entomos* an insect.) It includes all animals with jointed bodies, which have jointed limbs; as flies, spiders, lobsters.

2. *Vermes*. The science of which is called *herminthology*. It includes all soft animals of the *avertebral* division, which have no jointed limbs, with or without hard coverings; as angle-worms, snails, oysters, and infusory animals, (*animalculæ*).

According to the classification of Linnæus, with some modifications by Cuvier, the Animal Kingdom is arranged under four grand divisions, viz.

VERTEBRAL, MOLLUSCOUS, ARTICULATED, and RADIATED. These are subdivided into classes and orders.

First Grand Division.—Vertebral Animals.

Class 1. *Mammalia*, or such as at first are nourished by milk. This class have lungs, and peculiar organs for imbibing their food, during their first stage of existence.

The *First order* is called *Bi-mani* (from *bis* two, *mani* hands;) this order includes *man* only; we find here no generic or specific differences, but the following *varieties*.

1. *Caucasian* race, anciently inhabiting the country about the Caspian and Black Seas; from these we are descended.

2. The *Mongolian*, the ancient inhabitants about the Pacific Ocean, from whom the Chinese are descended.

3. The *Ethiopian* or Negro race.

The *Second order* contains the *quadru-mani*, from *quatuor*, four, and *mani*, hands. These have thumbs or toes, separate, on each of the four feet. We here find orang-outang (sometimes called the wild man) and the monkey.

The *Third order* contains *carnivorous* animals, or *flesh feeders*, having no separate thumbs, or having great toes without nails; as the dog and cat.

The *Fourth order* contains the *Gnawers*, having no canine teeth (those which are called eye-teeth), feeding almost wholly on vegetable substances; as the Rat and Squirrel.

The *Fifth order* is *Edentata*, or animals *wanting teeth*; as the sloth and armadillo.

The *Sixth order*, *Pachyderma*, thick skin animals with hoofs; as the elephant, horse, and hog.

The *Seventh order* contains the *Ruminating* animals, such as chew the cud, having front teeth (incisors) below only, and feet with hoofs cloven; as the ox, sheep, and camel.

The *Eighth order*, *Cete*, contains aquatic animals, such as live in water, having no kind of feet, or whose feet are fin-like limbs; as the whale and dolphin.

We have enumerated all the orders of the class *Mammalia*, as it is the one on which man is placed; we shall now notice the remaining classes of animals, without going into so minute a detail of their orders.

Class II. Contains Birds (*Aves*), which are distinguished by having the body covered with feathers and down, long naked jaws, two wings formed for flight: they

are called bi-ped (from *bis* two, and *pedes* feet.) The orders in this class, are chiefly distinguished from each other by the peculiar make of the bill and feet.

Class III. *Amphibia*, contains amphibious animals, including what are commonly called *reptiles*. It is divided into four orders.

1. With shells over their back, and four feet; as the tortoise and turtle.

2. Covered with scales, and having four feet; as the crocodile and lizard.

3. Body naked, destitute of feet; as serpents and snakes.

4. The body naked, and having two, or four feet; as the frog and toad.

Class IV. Contains *Fishes* (Pisces), natives of the water, unable to exist for any length of time out of it; swift in their motions, and voracious in their appetites, breathing by means of gills, which are generally united in a long arch; swimming by means of radiated fins, and mostly covered with scales.

Second Grand Division.

Class V. *Mollusca*, bodies soft without bones, but their muscles attached to a skin which forms a calcareous covering, called a shell, and is in many cases, produced from their skin. These animals possess no organs of sense but those of taste and sight, and these are often wanting. The nautilus and cuttle-fish are of the highest order of Molluscous animals.

One order contains animals without head, having a shell usually of two pieces; these are called *Bi-valves*; as the oyster, clam, and snail. The study of conchology (from *conchus* a shell) has relation to this class of animals.

Third Grand Division.

We proceed next to those animals called *Articulated*; these have jointed trunks and mostly jointed limbs. They possess the faculty of *locomotion*, or changing place: some have feet, and others are destitute of them; the latter move by trailing along their bodies.

Class VI. *Annelida*, contains such animals as have

red blood, without a bony skeleton; bodies soft and long, the covering divided into transverse rings; they live mostly in water; some of them secrete calcareous matter, which forms a hard covering or shell; as the earth or angle-worm, and leech.

Class VII. *Crustacea*, contains animals without blood, with jointed limbs fastened to a calcareous *crust*; they breathe by a kind of gills.

Class VIII. *Arachnida*, contains spider-like animals without blood, having jointed limbs, without horns: they breathe by little openings, which lead to organs resembling lungs, or by little pipes distributed over the whole body: these do not pass through any important change of state, as insects do; they have mostly six or eight eyes, and eight feet, and feed chiefly on living animals. Examples of this class are the spider and scorpion.

Class IX. *Insecta*, or insects, without blood, having jointed limbs and horns: they breathe by two pipes, running parallel to each other, through the whole body; they have two horns; they are mostly winged, having one or two pairs: a few are without wings; mostly with six feet. They possess all the senses which belong to any class of animals except that of hearing.

The winged insects pass through several changes or metamorphoses. The Butterfly is first an *egg*; this when hatched is long and cylindrical, and divided into numerous rings, having many short legs, jaws, and several small eyes; this is the *larva*, or caterpillar. At length it casts off its skin, and appears in another form without limbs. It neither takes nourishment, moves, nor gives any sign of life: this is called the *chrysalis*. In process of time, by examining it closely, the imperfect form of the butterfly may be seen through the envelope; this, it soon bursts, and a *perfect butterfly* appears. When about to pass into the chrysalis state, of which they appear to have warning, the insect selects some place where it may repose safely during its temporary death.* The silk-worm spins itself a silken shroud, and from this all our silk is obtained.

* May not this be considered as a lesson to man to anticipate

Fourth Grand Division.—Radiated Animals.

Class X. *Zoophytes*, or animal plants. Here we find the lowest beings in the animal kingdom. Some of the orders of this class contain animals which have neither heart, brains, nerves nor any apparent means of breathing. These are sometimes called *animal plants*; many of them, as the *corals*, are fixed to rocks, and never change place. The term coral includes under it many species; the red coral used for ornaments is the most beautiful. The substance of coral, when subjected to chemical analysis, is found to consist chiefly of *carbonate of lime*; the hard crust which envelopes the animal substances, is an excretion formed by it in the same way as the shells of the oyster and lobster are produced, or as nails grow upon the fingers and toes of the human body. The quantity of this carbonate of lime elaborated by the little coral animal is truly wonderful; islands are formed and harbors blocked up by it. Some of the zoophytes are fixed, by a kind of root, to the bottom of the sea; some, as the *sea-nettle*, which appears like the segment of a circle, are carried about by the motion of the waters, without any voluntary motion, as are also the *sea daisy*, *sea mary-gold*, and the *sea carnation*, so named from an apparent resemblance to those plants. We find here the *sea-fan*, the *sea-pen* and the *madrepore*, the latter of which are often thrown together in vast quantities.

The Sponge also belongs to this class of strange animal substances; it consists of a fibrous mass, containing a jelly-like substance, which, when touched, discovers a slight sensation, the only sign of life manifested by it. There are many species of sponge; those most valued in the arts are found in the Mediterranean Sea and Indian Ocean. Some grow upon rocks, and are found covering the interior of submarine caves. The *Spongia parasitica* is seen growing upon the back and legs of a species of crab; sometimes as many as forty individual sponges extend themselves over the the crab,

and provide for the change in his existence, which his bodily infirmities and daily observation teach him is to be his own lot?

impeding the motion of its joints, spreading like a cloak over its back, or forming for its head grotesque and towering ornaments, from which the poor crab vainly attempts to disencumber itself.

Some species of the sponge grow to a very large size ; one has been found in the East Indies in the form of a cup, capable of containing ten gallons of water. The fibrous part of the sponge is the skeleton of the animal : the large apertures serve to carry out fluids from within ; while the water by which the animal is nourished is imbibed by minute pores : this continual circulation of water is one of the most important functions of the living sponge.

These animals resemble plants in their manner of producing others ; they form a species of germ, like the bud growing upon the stalk ; this falls off from the stem, and becomes a perfect animal. If a part of one of those animals is separated from the rest, it will itself be as perfect a living animal as was the whole before. A polypus can be divided into as many animals as it contains atoms ; some of this order are very properly called *hydras* (many headed). Besides these, there is another order of animal substances, *infusoria*, which appear like a homogeneous mass, having no appearance of any limbs whatever ; these are either angular, oval or globular.

At the head of the animal kingdom we found man, sufficiently resembling brute animals in his material frame to constitute part of an extensive class, embracing the ape, elephant, and dog ; yet between the lowest degree of intelligence in the human race, and the highest faculties of brutes, there is a line of distinction marked by the hand of the Almighty, in characters too obvious for doubt. God said, 'Let us make man in our own image ; and he breathed into him the breath of life. And man became a living *soul*.'

Some writers have attempted to show that man differs only from the inferior order of animals in possessing a greater variety of instincts. But however wonderful may appear the instinctive perceptions of brutes, they are destitute of reason, and incapable of being the subjects of moral government. We must, therefore, both from

our own observation and the declarations of scripture, infer, that the faculties of man differ, not in *degree* only, but distinctly in their *nature*, from those of all other beings upon our globe.

‘Man,’ says Buffon, ‘by his form, and the perfection of his organs, and as the only being on earth endowed with reason, seems properly placed at the head of the kingdoms of nature. All in him announces the lord of the earth; his form marks his superiority over all living beings; he stands erect in the attitude of command; he can gaze upon the heavens; on his face is imprinted the character of dignity; the image of his soul is painted upon his features, and the excellence of his nature penetrates through his material organs and animates the expression of his countenance.’

In the orders of animals next to man, we find the senses of sight, touch, taste, and smell, equally perfect as those possessed by him, and in some cases they are even more acute; but as we proceed downwards through the gradations of animal existence, we perceive the number and acuteness of the senses to diminish; we find some beings with but four senses, some with three, others with two; and lastly, in the Zoophytes, we find only the sense of touch, and that so faintly exhibited, as almost to lead us to doubt its existence.

The branches of zoology which may be pursued most easily and most agreeably by females are *conchology* and *entomology*. Conchology presents to the eye of taste many splendid and curious objects. Fashion with her potent wand seems to have ordered shells a place in the saloon and boudoir, and it now remains for science to make her claim to the right of arranging them according to her own methodical and philosophical rules.

‘To procure shells in their native situation is by no means difficult; they may be picked up in ledges, and on banks; drawn out of ponds and rivers, along with weeds; collected on the sea shore, or among rocks; or they may be found among the refuse, in fisherman’s nets. To obtain an extensive collection in this way, would, however, require much time and travelling, or the kind aid of many friends: enough, however, to illus-

trate the classes, orders, and many of the families, may be thus easily assembled, and afford much practical instruction. We recommend such a commencement before recourse be had to the more usual mode of obtaining a collection; namely, that of purchase. If the latter means be resorted to, the buyer should be satisfied that each shell is perfect and full grown, and, if only one of the kind be selected, well colored, and as much in its natural state as a freedom from foreign matters will permit: all degrees of artificial polish, or form, should be considered as blemishes; except in articles of ornament. The size should be suited, as nearly as possible, to that of the purchaser's cabinet. It will be found of advantage to the student, to endeavor to fill up her series of families, or genera, before she is anxious about particular species; unless she would confine her collection to some one tribe, which, after she has obtained a little general information, is a good practice. A collection is best kept in small trays, in shallow drawers of equal depth; and such specimens as are too large for the drawers, will form a handsome article of furniture arranged in a glass case. Our reason for recommending drawers of an equal depth, is, that a systematic arrangement may be followed which would add greatly to the value of any collection, and would be entirely destroyed by having regard to every variation of size. No other care will be requisite, than to exclude the dust, or occasionally wash the specimens tenderly with soap and water.' *

Entomology is an interesting branch of Natural History. There is a difficulty in the pursuit of this, which does not exist in the study of shells, since in the latter case, in obtaining specimens, we do not usually need to destroy animal life; the inhabitant of the shell being in most cases decayed, before its covering passes into our hands. It is the tenement, and not the organized being which is the object of our classification. But in the examination of insects we cannot but experience uneasiness at the idea of causing pain, even to a poor beetle—and then the giddy butterfly so joyous and

* Young Lady's Book.

sportive, we cannot but feel some regret to abridge its ephemeral existence, and to know that its beauty has accelerated its doom—emblem but too apt of many an unfortunate of our own sex! And yet, waiving the consideration of suffering, which may be, in a degree, imaginary, since there are various ways in which insects may be deprived of life without pain, there is much to interest the mind in the study of Entomology,—much to awaken new admiration, for the works of Nature, and to show forth the wonderful power and wisdom of the great Creator. The least insect, considered as the workmanship of God, becomes to us a curious manifestation of his skill. We find insects like all other organized beings arranged by nature into genera, as in the butterfly, *papilio*; the bee, *apis*; the fly, *musca*, &c. Orders and classes are a less natural division formed by men of science for the purpose of more convenient reference and arrangement.

The study of zoology will naturally lead you to think more of the structure of your own frame; and however startling the idea may be, I cannot but consider some knowledge of the human anatomy as desirable for females. You will pardon me if I here allude to the utility of this knowledge as exemplified in the case of my own mother, in whose recent loss I have had the kind sympathy of many an affectionate heart among my pupils.

She early acquired a habit of examining the anatomy of such animals as are used for food; joints of meat, fowls, &c. she dissected with particular attention to the form and position of the different bones. Thus she soon became an adept at carving, (an art which every mistress of a family ought to understand) and, reasoning from analogy, formed a tolerably correct idea of the human anatomy. In rearing a large family, she often found this knowledge of great use. In more than one case, where accidents either in her own family and immediate neighborhood had caused dislocation of joints, and immediate surgical aid could not be obtained, she has replaced bones, and secured them by proper ligatures.

You may now shrink from the thought of performing such an office; but in the varied scenes of life many trials may be required of your skill, fortitude and

strength of nerves, from which sensibility may revolt—but which is the truly good and interesting neighbor, daughter, wife, or mother,—she who can command her own feelings sufficiently to perform painful offices for the relief of those she loves, and even for the sake of common humanity, or she who, like Niobe, dissolved in sentimental grief, commiserates, without attempting to relieve? Youth and beauty may now gain for you a short-lived admiration, an evanescent love; but the time will soon arrive when you will be respected and honored only as you are wise and useful.

Botany.

The study of Botany is highly calculated to interest females, and to enlarge and discipline the mind. This idea and the conviction that no popular work existed which could lead the pupil step by step from the most simple elements to the general principles of the science, gave rise to my Familiar Lectures on Botany.* Since the publication of that volume, I have had the satisfaction of knowing that the science of which it treats has been extensively introduced into female seminaries and schools, of every grade, from the highest to the lowest. The mistaken idea that Botany was a dry and difficult study, had deterred most females from attempting to gain any scientific knowledge of the vegetable kingdom. So far however is this from being the case, that there is no study in which the leading principles of arrangement can be more readily comprehended and remembered. Scientific names may not be so easily retained in memory, but it is the *system*, and not the names, which is of the most importance. It is however far less difficult to remember technical terms than is often imagined, especially when these are referred to their primitives, and their original signification understood.

In exhibiting some of the advantages of the study of

* At the request of many teachers of *common schools*, the author has been induced to commence a smaller work, which may be afforded at such a price as will allow of general use, and in a style adapted to the capacities of children. This work will soon be offered to the public.

botany, I shall make use of the Introductory Lecture in the work to which I have just referred.

The universe consists of *matter* and *mind*. By the faculties of mind with which God has endowed us, we are able to examine into the properties of the material objects by which we are surrounded.

If we had no sciences, nature would present exactly the same phenomena as at present. The heavenly bodies would move with equal regularity, and preserve the same relative situations, although no system of Astronomy had been formed. The laws of gravity and of motion would operate in the same manner as at present, if we had no such science as Natural Philosophy. The affinities of substances for each other were the same, before the science of Chemistry existed, as they are now. It is an important truth, and one which cannot be too much impressed upon the mind in all scientific investigations, that no systems of man can change the laws and operations of nature; though by systems, we are enabled to gain a knowledge of these laws and relations.

The Deity has not only placed before us an almost infinite variety of objects, but has given to our minds the power of reducing them into classes, so as to form beautiful and regular systems, by which we can comprehend, under a few terms, the vast number of individual things, which would, otherwise, present to our bewildered minds a confused and indiscriminate mass. This power of the mind, so important in classification, is that of *discovering resemblances*. We perceive two objects, we have an idea of their resemblance, and we give a common name to both; other similar objects are then referred to the same class, or receive the same name. A child sees a flower which he is told is a rose; he sees another resembling it, and nature teaches him to call that also a rose. On this operation of the mind depends the power of forming classes, or of *generalizing*.

Some relations or resemblances are seen at the first glance; others are not discovered until after close examination and reflection; but the most perfect classification is not always founded upon the most obvious resemblances. A person ignorant of botany, on behold-

ing the profusion of flowers which adorn the face of nature, would discover general resemblances, and perhaps form in his mind some order of arrangement; but the system of botany now in use, neglecting the most conspicuous parts of the flower, is founded upon the observation of small parts of it, which a common observer might not notice.

System is necessary in every science. It not only assists in the acquisition of knowledge, but enables us to retain what is thus acquired; and, by the laws of association, to call forth what is treasured up in the storehouse of the mind. System is important not only in the grave and elevated departments of science, but is essential in the most common concerns and operations of ordinary life. In conducting any kind of business, and in the arrangement of household concerns, it is indispensable to the success of the one, and to the comfort of those interested in the other. The very logical and systematic arrangement which prevails in Botanical science, has, without doubt, a tendency to induce in the mind the *habit and love of order*; which, when once established, will operate, even in the minutest concerns. Whoever traces this system, through its various connexions, by a gradual progress from individual plants to general classes, until the whole vegetable world seems brought into one point of view; and then descends in the same methodical manner, from generals to particulars, must acquire a habit of arrangement, and a perception of order, which is the true *practical logic*.

The study of botany seems peculiarly adapted to females, the objects of its investigation are beautiful and delicate; its pursuits, leading to exercise in the open air, are conducive to health and cheerfulness. It is not a sedentary study which can be acquired in the library, but the objects of the science are scattered over the surface of the earth, along the banks of the winding brooks, on the borders of precipices, the sides of mountains, and the depths of the forest.

A knowledge of botany is necessary to the medical profession. Our Almighty Benefactor, in bestowing upon us the vegetable tribes, has not only provided a source of refined enjoyment in the contemplation of

their beautiful forms and colors; in their fragrance, by which, in their peculiar language, they seem to hold secret communion with our minds; He has not only given them for our food and clothing, but with kind, parental care, has, in them, provided powers to counteract and remove the diseases to which mankind are subject. For many ages plants were the only medicines known, or used; but modern discoveries in chemistry, by forming compounds of previously existing elements, have, in some degree, superseded their use. Although the science of medicine has received much additional light from chemistry, it may perhaps in modern days have occupied the attention of medical men too exclusively; inducing them to toil in their laboratories to form those combinations which nature had done, much more perfectly, in the plants which they pass unheeded. It is probable that the medicinal productions of the animal and mineral kingdoms, bear but a small proportion to those of the vegetable.

When our forefathers came to this country, they found the natives in possession of much medical knowledge of plants. Having no remedies prepared by scientific skill, the Indians were led, by necessity, to the use of those which nature offered them; and by experience and observation, they had arrived at many valuable conclusions as to the qualities of plants. Their mode of life, leading them to penetrate the shades of the forest, and to climb the mountain precipices, naturally associated them much with the vegetable world. The Indian woman, the patient sharer in these excursions, was led to look for such plants as she might use for the diseases of her family. Each new and curious plant, though not viewed by her as a botanist would now behold it, doubtless was regarded with scrutinizing attention; the color, taste, and smell, were carefully remarked as indications of its properties. But the discoveries and observations of the Indians have perished with themselves; having no system for the classification or description of plants, nor any written language by which such a system might have been conveyed to others, no vestige, but uncertain tradition, remains of their knowledge of the medicinal qualities of plants.

The study of nature in any of her varieties is highly interesting and useful. But the *heavenly bodies* are far distant from us, and were they within our reach, are too mighty for us to grasp : our feeble minds seem overwhelmed in the contemplation of their immensity.

Animals, though affording the most striking marks of designing wisdom, cannot be dissected and examined without painful emotions.

The *vegetable world* offers a boundless field of inquiry, which may be explored with the most pure and delightful emotions. Here the Almighty seems to manifest himself to us with less of that dazzling sublimity which it is almost painful to behold in His more magnificent creations ; and it might almost appear, that accommodating the vegetable world to our capacities, He had especially designed it for our investigation and amusement.

The study of Botany naturally leads to greater love and reverence for the Deity. We would not affirm that it does in reality always produce this effect ; for, unhappily, there are some minds which, though quick to perceive the beauties of nature, seem, blindly, to overlook Him who spread them forth. They can admire the gifts, while they forget the Giver. But those who feel in their hearts a love to God, and who see in the natural world the workings of His power, can look abroad, and, adopting the language of a Christian poet, exclaim,

‘ My Father made them all.’

In following the course laid down in the botanical textbook now used in the Seminary, the pupil is first introduced to the analytical part of botany ; she is presented with flowers of the first ten classes, and having learned to distinguish them scientifically, is then introduced to those which are more complex in their relations, until the representatives of the twenty-one classes of vegetables are all brought under review.

After having learned to assign plants to their appropriate classes, the pupil is taught the relations of each part of a vegetable to the whole organized being, the external varieties of roots, stems, leaves, corollas, &c., with their physiological uses. In the third part of the

Lectures on Botany, the pupil is taught the various systems which have at different times been introduced by men of science, with the rules of classification and arrangement which have been deduced from the nature of the mind, and of the objects to be classed; and made more minutely acquainted with the system of Linnæus, and of the natural history of individual plants.

Lastly is given a general view of the vegetable world, as respects geographical situation, and their successive changes during the year, their habits, food, diseases, &c., with observations upon the relations which the vegetable world, bears to the other kingdoms of nature.

For a sketch of the history of botanical science, I must refer you to some of the last lectures in the work, whose outlines I have now laid before you. Before leaving this subject, I must again repeat what has so often been urged upon you, that botany is a practical science; that during the season of flowers, you should diligently collect specimens of every new species that appears. The technical descriptions in the latter part of your text book, will not be found sufficiently comprehensive for those who pursue the science thoroughly. To such, the manual of Professor Eaton, or some other merely descriptive work, will be necessary.*

LECTURE XVIII.

Mineralogy and Geology.

‘Lo! Vanity, with dazzling gems adorned,
Flaunts proudly by:
While Science pores upon a specimen
Rough from the bosom of its native mine.’

THE science of Mineralogy has not yet received from our sex that attention which it deserves, or which it is

* The science of botany, it will be seen, is more briefly treated of in these lectures than most other branches of education; this

undoubtedly destined to command. We do not expect, or wish to see you devoting that time to this study which may be needed for other pursuits; but a very little attention to the subject, especially after you have become acquainted with chemistry, will enable you to comprehend the general features of the science, and will render cabinets of minerals something more to you than collections of glittering stones. Let us suppose (a very common case) a coterie of fine ladies visiting a scientific collection, and while the learned professor or proprietor is politely explaining to them the properties and peculiarities of the substances, or the mode of arrangement which he has adopted, they are evidently paying no attention to all this, but exclaiming to each other '*how sweet this is,*' '*how splendid,*' '*what beautiful ornaments that would make,*'—or perhaps lounging away the time, with entire indifference as to the objects which they had professedly come to examine. Now all that I plead for, is, that you may have enough of science to lead you to wish for more; enough to render you interesting companions to men of science. They will not generally expect more of you, than that you should be attentive listeners, or be able to suggest subjects for their explanation. Yet should you chance to become sufficiently acquainted with any branch of science to enable you to impart information, I know of no law, either of morality or propriety, which would be violated by your modestly imparting that knowledge to others; neither do I think any man of real science would be displeased to find a lady capable of supporting conversation on scientific subjects.

I shall now, as briefly as possible, give you some of the

is owing to the peculiar nature of the study, which, in order to be understood, should be illustrated either by drawings or natural flowers. A mere *outline* of botany can be of little use to those who are unacquainted with the science: to those who have a practical knowledge of it, compendiums are neither very interesting or useful. Like the objects of the study, botany needs to be seen as a whole, in order to show its beauty and utility. Those who only look at the Greek names of classes and orders, not unfrequently acquire a prejudice against the science, which one judicious lecture from a practical botanist might remove.

leading traits in the science of mineralogy, with its subordinate branch, geology.

Minerals are inorganized bodies, possessing neither life, nor the power of voluntary motion. Mineralogy teaches the properties and relations of minerals, and the method of describing and arranging them : it comprehends not only the study of solid bodies, such as earths and metals, but gasses and liquids—of all matter that is not either animal or vegetable.

Minerals are *homogeneous*, (simple) or *heterogeneous* (compound). *Simple minerals* are so called, not in reference to the *elements* which compose them, for in this view few are simple ; but as they appear to the eye to consist of one uniform mass. The simple minerals only are the subjects with which mineralogy is concerned. Thus lime is simple in its structure, though chemically considered, it consists of carbonic acid and lime.

Compound Minerals present to the eye an aggregation of different substances ; as granite, which is composed of quartz, mica, and feldspar. The compound minerals usually exist in large masses ; as rocks, and mountains : the study of these constitute geology. Some knowledge of the simple minerals is necessary before commencing geological studies. ‘The distinctions which exist between different *rocks* must depend on the nature of the simple minerals which enter into their compositions, or on the mode of aggregation, and the diversity of aspect, exhibited by compound minerals, even when bearing the same name, is so great, as to render it necessary very critically to examine the simple minerals of which they are composed.’*

We perceive then the intimate relation between mineralogy and geology. Mineralogy has also a very intimate connexion with chemistry. A mineralogist may examine all the external characters of a mineral, hardness, color, fracture, lustre, specific gravity, &c., and according to circumstances, give it a name and place in his classification ; but, in order to know its constituent elements, its degree of fusibility, the

* Cleaveland’s Mineralogy.

manner in which it is affected by acids and other substances, chemistry must afford its aid. Berzelius, a celebrated Swedish mineralogist, remarks that each science, in order to be perfect should contain within itself all that is necessary to its full developement, and yet so far from this, at the present day there is a connexion more or less intimate between all the branches of human knowledge, so that they may be considered as forming *one universal science*, the knowledge of any one branch, throwing light upon all the others.

One of the most curious and interesting branches of Mineralogy, is the study of crystals, or as it is termed *crystallography*. The very singular and mysterious agency which operates in the atoms of different substances, producing in each its determinate form, as of cube, prism, rhomboid, &c., is no less wonderful than the phenomenon of the vital principle in organized beings.

The mode of obtaining crystals of alum, blue vitriol, &c., for baskets and other ornamental work, is familiar to many ladies: they know that the mineral must first be dissolved in water, and the solution slowly evaporated, that the particles of alum or other substance separating from the water, will unite and form little crystals which float on the surface, until their weight, increased by the accretion of new particles, causes them to fall through the liquid.

Alum (*sulphate of alumite and potash*) forms crystals of eight sides, or octahedrons.

Blue vitriol (*sulphate of copper*) forms prismatic crystals of four, six, or more sides.

Common salt (*chloride of sodium*, or muriate of soda) crystallizes in cubes. The crystalization may be disturbed, so as not to present the primitive form of the crystals; but it is ascertained that every mineral has a tendency to its peculiar form of crystalization. The ultimate atom of the mineral is supposed to be of the same figure as the primitive form of its crystal.

The term crystal is from the Greek *krustallos*, which signifies ice. The ancients believed that crystallized quartz, or rock crystal, was water congealed by extreme cold. Mineralogists were for some time divided as to the

proper methods of classing the substances which were objects of their investigation. While some contended that the *species* of minerals, should be formed wholly upon their external characters; others as strongly insisted upon an arrangement founded wholly on chemical principles, or the constituent elements of the minerals. The wiser course has of late been allowed of permitting mineralogy to receive the light which chemistry is able to throw upon it, without relinquishing any advantage which it may otherwise possess.

In arranging a cabinet of minerals, it is necessary to fix on some method of classification, as a guide.* Cleaveland makes four classes of minerals; 1st, *substances not metallic, composed entirely, or in part, of an acid*. This class, he divides into *four orders*; these he divides into *genera*, and these again into *species*.

The 2d class is Earthy Compounds, or Stones.

The 3d class is Combustibles.

The 4th class is Ores.

If you have but few substances at first, and commence arranging these scientifically, your interest in the subject will increase, and your collection will no doubt receive additions from various quarters. Every walk and every journey, may present you with something for your cabinet, and a new interest will thus be given to the face of nature. I should here observe, that you must not expect to be able, without assistance, to ascertain the name of a mineral, as easily as you find by botanical analysis the name of a plant. In mineralogy, you must at first depend chiefly on the opinions of those who have a practical knowledge of the science; that is, you will need at first to have a practical mineralogist label your specimens, except in the case of such common substances as you already know by their popular names. After having seen and handled a mineral, and placed it in its proper situation in your cabinet, you will seldom forget its appearance and name; you will, by attention, acquire an astonishing

* Cleaveland's Mineralogy is perhaps more generally followed than any other in this country. Emmons's is a less expensive work, and very clear and concise.

quickness and facility in distinguishing specimens ; and names which at first seemed hard and difficult to be remembered, will become as familiar as the words chair, table, &c.

We will suppose you have a specimen of the *anthracite coal*, called Lehigh, Schuylkill, &c. according to the name of the river near which it is obtained. You wish to know where to place this mineral in your collection, and to ascertain its character. In the first place, you must consider in which class it is placed. The third class (in Cleaveland's work) contains *combustibles*; this substance being a combustible, you will perceive must be in the third class of minerals; where you will find the species hydrogen gas, sulphur, bitumen, amber, and diamond which burns brilliantly in oxygen gas; and next to diamond, you find anthracite, which is the sixth species in the class. You are then directed to the page which contains a minute description of the substance in question, with its varieties, localities, and uses.

In this way, you may proceed with any other mineral, whose common name is known to you; but without much practical knowledge, you will not acquire sufficient accuracy in chemical analyses, or in ascertaining the specific gravity, and some other external characters of minerals, to be able to learn, by your own investigations, the names of such minerals as are unknown to you.

Geology.

To females, geology is chiefly important, by its effect in enlarging their sphere of thought, rendering them more interesting as companions to men of science, and better capable of instructing the young. Especially does geology afford important aid to religion by confirming the truth of revelation. Infidels are confounded by the undeniable truth, that as the structure of the earth is investigated, and the secrets of its interior brought to light, the strictest coincidence is observed between them, and the facts recorded in Scripture. 'I believe,' says Professor Silliman, 'the period is not far distant, when geology will be admitted into the train of her elder sister, astron-

omy, and that both will be eventually hailed as the friends and allies of revealed religion.'

The physical history of the Deluge is everywhere inscribed upon the surface of the earth; upon its chasms and cliffs, its valleys and mountains. For a knowledge of the moral cause of these convulsions, we must look to the Scriptures; we there find that 'God seeing the wickedness of man was great on the earth, that every imagination of the thoughts of his heart was only evil continually, and that the earth was filled with violence, resolved to destroy man by a flood of waters.' We find that 'the waters prevailed upon the earth an hundred and fifty days, and that all the hills under the whole heaven were covered.'

This one grand proof of the Scriptures, offered by geological science, is enough to entitle it to the attention of the Christian, for it furnishes sensible demonstration, broad and stable as the earth, of the truth of that book, which traces man from his creation and first planting upon this globe, and carries him into eternity, raising the curtain between him and the invisible world of spirits. Were it not for this book, we should have no knowledge but that afforded by the dim and uncertain light of nature, that our souls were immortal, and that man dieth not like 'the beasts that perish.' Geology leads us to view the globe upon a great scale, to meditate upon the bold and romantic scenes of nature, to survey mountains and valleys, as sunk or raised by great convulsions of the earth, to trace the hand of time in shattering and crumbling the hardest rocks; to mark the little brook and the majestic river, alike bearing in their course the sands thus formed, and depositing them upon their banks, or at their mouths, thus forming new land in the dominions of water; and again, to see lands in their turn inundated, and overflowed.

To one acquainted with geological facts, and interested in the science, even the barren rock, the bleak mountain, and the gloomy mine, are objects of attention. Ancient buildings and venerable ruins are interesting, both as triumphs of the art of man, and memorials of the decay of his labor, but mountains and precipices are the

workmanship of Almighty hands. Volcanoes and earthquakes are overwhelming manifestations of His power. In beholding these phenomena, we feel indeed that 'the Lord reigneth, and is clothed with majesty.'

We shall not attempt to give a view of all the important principles of geology, but present you with a very general sketch of the science, hoping it may not be uninteresting to those who already possess some knowledge of the subject, and may induce others to devote some attention to this interesting branch of natural science.

The elementary substances which form the solid matter of the globe, are, 1st, *Earths*; 2d, *Metals*; 3d, *Inflammable Principles*; and 4th, *Alkalies*.

THE EARTHS are	<i>Silex.</i>
	<i>Alumine.</i>
	<i>Lime.</i>
	<i>Magnesia.</i>
PRINCIPAL METALS.	<i>Iron.</i>
	<i>Manganese.</i>
INFLAMMABLE PRINCIPLES.	<i>Sulphur.</i>
	<i>Carbon.</i>
ALKALIES.	<i>Potash.</i>
	<i>Soda.</i>

These are the elementary substances which enter into the composition of the principal masses of minerals found upon the surface of the globe, and in the interior as far as man has yet penetrated; gold, silver, diamond and other rare minerals are found in smaller masses, and in veins constituting but one part in twenty of the solid parts of the globe.

Earths.

Silex, or *Siliceous earth*, exists nearly pure in flint and quartz; it produces a great degree of hardness in all stones, of which it forms a part. *Silex* forms a part of almost all rocks and stones. *Alumine* (*Argilla*) or pure clay, is seldom found, although it is very common in a mixed state; it is soft and smooth to the touch. Rocks which contain a considerable proportion of alumine are termed *argillaceous*. *Lime* (*Calx*.) This earth combined with an acid called carbonic, forms *lime-stone*, *marble* and *chalk*, (carbonates of lime) distinguished from each other by different degrees of hardness. Lime united

with sulphuric acid, forms a stone called *gypsum*, (sulphate of lime) which is softer than limestone, and does not, like that, effervesce with acids. Lime, mixed with common clay, forms marl.

Magnesia is seldom found pure in nature ; it forms an ingredient in some rocks, to which it communicates a smoothness, a striped texture, and sometimes a greenish color.

Metals.

Iron forms a part of many rocks and stones, giving them a variety of coloring, and increasing their weight. *Manganese* communicates to rocks a dull reddish color, inclining to purple, and a dry and burnt-like appearance.

Inflammable Substances.

Sulphur is found in large masses, combined with oxygen, forming sulphuric acid ; it unites with lime, and forms gypsum, or plaster of Paris.

Carbon, or *Charcoal*, is a constituent of many slate rocks, giving them a dark color ; it is the principal constituent of that kind of coal which is found in beds. Carbon combined with oxygen, forming carbonic acid, is combined with all limestone rocks.

Alkalies.

Potash and *Soda*. These alkalies do not exist in rocks to a great degree, but soda forms an important constituent of the water of the ocean and rock salts.

Besides the elementary substances above enumerated, we will mention *muratic acid*, which, combined with soda, forms salt ; and *phosphoric acid*, which, combined with lime, is a principal constituent of animal bones ; the latter acid is found in some limestone beds, but rarely occurs in the mineral kingdom.

The few elementary substances which we have now described, form, either separately, or combined, all the simple minerals which compose rocks.

You will find it difficult, without some knowledge of chemistry, to understand in what manner these elementary substances combine with others, forming a great

variety of minerals, or rather you may be surprised that when closely combined, they can be separated from the materials with which they are united. The examination of the elementary bodies, Earths, Metals, Inflammable Principles, and Alkalies, properly belongs to the department of Chemistry ; and the study of simple minerals, belongs to the science of Mineralogy.

It is difficult to procure pure specimens of all the elementary principles, but the simple minerals are very common, and should be procured in the commencement of geological studies. The most important simple minerals, which enter into the formation of rocks, are as follows :

Quartz.	Hornblende.
Felspar.	Limestone.
Mica.	Gypsum.
Talc.	Slate, or Argillite.
Chlorite.	

These minerals are termed the alphabet of geology, and you could no more learn to read words, without a knowledge of the letters which form them, than you could learn to distinguish the different rocks, without a knowledge of the simple minerals of which they are composed. We will now examine the most striking characteristics of these minerals.

1. *Quartz*. This is the hardest mineral of which rocks are composed ; it strikes fire when struck with steel ; it is commonly white, though sometimes red, brown, or yellowish, and sometimes transparent. It is composed of silex, with a small portion of alumine. It is infusible, or cannot be melted when unmixed ; but with soda or any other alkali, it melts easily and forms glass. Quartz exists in *veins*, and sometimes in large *beds* ; even whole mountains are found composed of this mineral, in grains united without any cement, called *granular quartz*. Combined with alumine and iron, quartz forms *jasper*.

2. *Felspar* is less hard than quartz, is more brittle, and possesses a shining lustre. It is of various colors, white, yellowish, green, and flesh-colored. Felspar contains more of alumine and less of silex than quartz, with 13 parts in a hundred, of potash.

3. *Mica* consists of very thin glittering leaves, (*lamina*) which may be easily separated with a knife. Mica is of different colors, white, black, and sometimes yellow, like gold; for which it has been mistaken by those who only judge of minerals by a superficial observation.

4. *Talc*. This is similar in many respects to mica; the plates are not like mica, elastic; it is usually of a green color, sometimes of a silvery white; it feels smooth like soap, to the touch.

5. *Chlorite*, (derived from a Greek word, *chloros*, signifying green) is of a green color, and often passes by insensible gradations into talc; it contains less of silex than is found in either mica or talc, but more of magnesia and the oxide of iron, to which its owes its color.

6. *Hornblende* is of a blackish, or dark green color, heavier than quartz or felspar, but not so hard, when scratched with a sharp pointed instrument; the streak is a light green; this mineral is sometimes found in large masses, forming entire mountains, but more frequently it is found as a part of compound rocks, called trap rocks, the origin of which has, among geologists, given rise to various opinions. Hornblende contains more of the oxide of iron, than any of the simple minerals; for this reason, it is more deeply colored.

A very common mineral called *serpentine*, from its spotted color, resembling the serpent's skin, is formed by a combination of hornblende with talc, or chlorite, often passing by insensible gradations into one or the other of these minerals.

7. *Limestone*, or *Carbonate of Lime*, when pure, is composed of lime and carbonic acid, in the proportions of fifty-seven parts lime, and forty-three carbonic acid; but the limestone is often combined with magnesia, alumine, silex, or iron. All limestones may be scraped with a knife; they effervesce when acids are applied to their surface: this latter property is an important test of the presence of lime in rocks. There are a great many varieties of limestone rocks, from the hardest marble to chalk. Gypsum, or sulphate of lime, is of a whitish color; it is much softer than carbonate of lime; it is found in beds, but not constituting rocks and mountains, like limestone.

It is, as its chemical name, sulphate of lime, would denote, a compound of lime and sulphuric acid. It is also called plaster-stone, and, from the place where it was first discovered, plaster of Paris.

8 *Slate*, or *Argillite*, (in German called *schistus*) is of a bluish or gray color, with a silky lustre; the structure is such, that in general it admits of being split into thin plates, as in the slate which is used for the roofs of houses, and in writing slates. By being united with a greater portion of carbon, it passes into a soft, dark, slaty bed, called *shale*.

We have now enumerated the elementary principles which enter into the composition of minerals, and considered the simple minerals, which, either separately or combined, form rocks and mountains. In order to know minerals, specimens must be examined, and carefully compared with descriptions; so that you can, without any difficulty, distinguish a piece of quartz, or mica, or any of the other simple minerals, and can also recognize them when you find them in a state of combination with others. This then will be the first stage in your geological study to know the elementary principles, and the simple minerals; and to procure specimens of the latter, your first step towards collecting a geological cabinet. You will of course understand, that each specimen is to be labelled and arranged in the order in which these have been described.

We will now explain to you, how the simple minerals just examined are combined to form the compounds which constitute rocks and mountains. You must, however, recollect that in many cases, these simple minerals themselves are found in large masses; rocks and even mountains of quartz are known to exist; limestone under various forms, often that of pure carbonate, is said to constitute about one-eighth of the known substance of the earth. Slate, or argillite, in nearly a simple state, forms rocks and mountains; but there are compound rocks to be considered, which in the structure of the earth are of far greater importance than the simple minerals.

Compound Rocks.

Granite. Here is a piece of a rock, called *granite*; you will perceive three distinct substances, which you will recognize to be quartz, mica, and felspar: the *quartz* is white, and has a crystalline appearance; it seems to consist of irregular grains, or, according to the geological term, it is *granular*.* The *mica* is distinguished by its shining black scales, which you can easily divide by the point of a penknife. The *felspar* is here flesh-colored; it seems to consist of finer particles than the quartz, resembling the rough edge of porcelain ware.

You must not, however, expect to find exactly the same appearances in every specimen of granite; sometimes the quartz is gray, or smoky, the mica varying in color through various gradations, from a silvery white to black, and the felspar is often of a snowy whiteness. Granite also varies in its constituent parts. We sometimes find *talc* in the place of mica, forming *Talc*y granite, *chlorite* forming Chloritic Granite, and hornblend, forming *Sienite*.†

Gneiss. This name was given to the rock we are now to examine, by German miners; it resembles granite, in being composed of the same materials, but with less felspar and quartz, and these in grains finer and less distinct than in granite. The mica is often arranged in thin leaves,‡ or layers; the perfect gneiss rocks may be split in the direction of the leaves of mica.

Although between a perfect specimen of gneiss and one of granite, we might perceive a marked difference, yet when the granite appears in fine grains with more of mica and less of felspar, it passes into gneiss, and it is by no means easy to ascertain the exact point where the one passes into the other.

Mica Slate is composed chiefly of quartz and mica, the latter being most abundant, often reflecting the rays

* This is said to have given rise to the name Granite.

† So named from Sienna, in Egypt, where this rock was anciently used for monuments.

‡ This kind of structure is called *foliated*, from the Latin word *folium*, a leaf.

of light with much brilliancy. This rock is more slaty than gneiss: the layers of mica are sometimes contorted or bent out of a straight course. Mica slate sometimes varies into gneiss and granite, though in its perfect state its character may be easily recognized.

The three rocks which we have now examined, viz. granite, gneiss, and mica slate, are, as you see, all composed of similar ingredients, but in different proportions and differently arranged; they form a great portion of the principal mountain ranges upon the face of the globe.

Having now instructed you in such preliminary knowledge as seemed necessary to enable you to comprehend the general principles of the science, I shall now offer the following outline of geology.

Geology is the science which exhibits the structure of the globe, and the materials of which it is composed, as far as they have been revealed to human observation. It is supposed by most geologists that the materials of the earth were once in a fluid state, and that the heaviest minerals took the lowest place. It appears evident that the earth very gradually became fitted for the habitation of men and animals. The six days of the Creation, spoken of in the first of Genesis, are supposed to have been six *periods* of time, of a length which must have comprehended many ages. That the *day* spoken of in Scripture was neither a period of twenty-four hours or from sun-rise to sun-set, is manifest not only from geological observation, but from the language of the bible. After enumerating the various days or periods of the creation, the sacred historian speaking of them all under one general head says, 'In *the day* in which God made the world,' &c. It is also said in scripture that 'with the Lord a thousand years are as one day, and one day as a thousand years.'

Without attempting to go minutely into the subject of the earth's formation as explained and taught by modern geology, I shall merely notice a few of its most prominent facts and principles.

It is found to be a fact that there is a class of rocks, the materials of which are heavier and more compact than any other, and which never contain any remains of animals or vegetables; they evidently appear to have lain below all the rock formations which have been discovered. These are called *primitive rocks*, being, as it is supposed, the first formed. They are the following:

First Class of Rocks.

Granite,	Granular Quartz,
Gneiss,	Granular Lime Rock,
Mica Slate,	Sparry Lime Rock,
Hornblende Rock,	Primitive Argillite.
Talcose Rock,	

Granite, as has been remarked, is composed of quartz, felspar, and mica; it is found in vast quantities in many countries; it constitutes a large portion of many of the highest mountains; it forms a siliceous soil, not favorable to vegetation, and makes a beautiful and durable building stone.

Gneiss. This rock is composed of the same materials as granite, viz. quartz, felspar, and mica; but the mica is arranged in parallel layers.

Mica Slate is composed chiefly of quartz and mica; the mica usually predominates. It disintegrates more rapidly than granite or gneiss.

Hornblende Rock consists of hornblende and felspar; when the felspar is in disseminated masses, it is called *Sienite*. The predominant color of the rock is green, sometimes inclining to brown. The sienite variety is susceptible of a high polish, and forms beautiful pieces for ornaments.

Talcose Rock, is an aggregate of talc and fine grains of quartz, and generally some mica. It is a slaty rock, and of a silver-gray color.

Granular Quartz is made up of grains of quartz, without any appearance of cement: when white, its sand is used in making glass.

Granular Lime Rock is made up of grains having a crystalline appearance: it receives a high polish,

and is much used for monuments, pillars, and in building.

Sparry Lime Rock is made up of fine grains of carbonate of lime : it resembles Nova Scotia plaster. From this stratum, nitrogen gas, in vast quantities, is supposed to issue.

Primitive Argillite is a homogeneous rock, of a slaty structure. It is used for roofing buildings.

A long period must have been required to bring the materials of these primitive rocks into the compact and hardened state in which we now find them ; for although the Deity could, in an instant, have changed the most subtle gasses into rocks and stones, we have no reason to believe that he did not operate by second causes as much in the formation of the world as he has since done. Chemical and mechanical agencies undoubtedly were brought into action to produce the intended effects : the dry land at length appeared, the waters being gathered together into oceans, seas, lakes and rivers.

After the first crust was formed around the earth, it is supposed that some great convulsion in the interior, either by means of volcanic fires, or the sudden percussion of internal gasses producing earthquakes, burst asunder this outer coat, and shattered into fragments, or broke into larger masses, the rocks of which it was composed.

At the breaking up of the rocky pavement of the globe, and crumbling of primitive rocks, of which this pavement was composed, a new formation was made of the fragments of the other rocks, united together by a kind of cement. This induces the opinion that volcanic fires were agents in producing the great commotion which tore up the foundations of the earth. Fire would of course melt or fuse, in a degree sufficient to form the cement ; for instance, where granite was thrown by the side of limestone, the silex of the one in contact with the alkali of the other would form a substance like glass, which you know is produced by the melting of sand and alkali together.

This second class of rocks are called *transition rocks*, because they are supposed to have been formed

at the changing or transition of the world from an uninhabited to a habitable state.

The rocks belonging to this class are,

Transition Argillite,	Graywacke, and
Calciferous Sand Rock,	Old Red Sand Stone.
Metalliferous Lime Rock,	

Transition Argillite is a soft, homogeneous rock, mostly of a bluish or dark color. It composes the rocks of the Cohoes Falls.* There seems to be very little difference between this and the Primitive Argillite, and it is thought proper, by some geologists, to include them all in one class.

Calciferous Sand Rock is composed of grains of quartz and carbonate of lime.

Metalliferous Lime Rock is of a gray or slate color. It derives its name from being often found to contain silver and other metals.

Graywacke is an aggregate of sand cemented by clay; it often contains scales of talc and mica. The color is usually gray. This rock constitutes most of the Catskill and Alleghany Mountains.

Old Red Sand Stone is an aggregate of angular grains of quartzose sand, held together by a ferruginous argillaceous cement. It forms a loose, red soil: it is valuable for building: when wrought, it is called *Free Stone*. It forms the bank of Connecticut River.

In the transition formation, we find the fossil remains of plants and animals; the plants are all of that kind, called in Botany *stiped*, that is, having no real stem, but a frond like the ferns and palms. These plants differ in several particulars from those which have the true stem or *caulis*, and are therefore called *cauline* plants. The seeds of stiped plants never have two *cotyledous*; the stalks grow from the centre outwardly, and are therefore called *endogenous*,† while the stems of cauline plants grow on the outside, and are called *exogenous*.

The fossil animals found in transition rocks are of

* These falls are on the Mohawk, a little above its mouth.

† The two words, *endogenous* and *exogenous*, are derived from the Greek: the first signifies to grow internally, the other to grow externally.

rages now extinct. At this second period of the world, a strange and appalling state of things existed; lizard-shape animals, extending to monstrous dimensions; the mastodum and megatherium of enormous bulk, and various other huge and singular animals had possession of the earth, and rolled their vast magnitudes over ferns and palms of a size corresponding to their own.

In the meantime a new set of rocks were gradually formed from the ruins of both primitive and transition; these were called secondary rocks: other plants and animals were at this period created.

These rocks are,

Mill-stone Grit,	Calciferous Slate,
Saliferous Rock,	Geodiferous Lime Rock,
Gray Band,	Cornitiferous Lime Rock, and
Ferriferous Slate,	Pyritiferous Rock.
Ferriferous Sand Rock,	

Mill-stone Grit is a coarse, harsh aggregate of sand and pebbles; the color is gray or reddish. It is used for mill-stones.

Saliferous Rock constitutes the floor of all the salt springs in the western country. It is used as a building stone.

Gray Band is a hard fine-grained gray rock, so compact that it may be considered homogeneous.

Ferriferous Slate is a hard silicious rock, lying over iron ore. It often appears in the bed of the Western Canal.

Calciferous Slate. This rock often contains carbonate of lime; it embraces beds of plaster and shell limestone; it forms, by disintegration, the best of soils.

Geodiferous Lime Rock. This name is given on account of small cavities which it contains, called *geodes*. This rock is found at Lockport and Niagara Falls.

Cornitiferous Lime Rock is made up of layers of shell-limestone, containing beds of horn-stone: from this circumstance, it receives its name—the Latin word *cornus*, signifying a horn. This rock is remarkable for its numerous caverns.

Pyritiferous Rock is a calcareous gray rock, abounding in iron pyrites.

At length, the earth being made habitable, man is formed; after a series of ages, the fountains of the deep

are broken up; the monsters which stalked over the earth, or crawled through its fens and marshes, are suddenly overwhelmed by the deluge which was sent to destroy the human monsters who did 'evil in the sight of God.' Antediluvian remains of animals are found in Siberia, India, England, France, and Germany, and in various parts of America.

In considering the ruins of the deluge, we must not fall into the error which has been too common, of considering all fossil shells, and other organic remains found imbedded in rocks, as marks of that event. It appears probable, from observations made upon the rock strata, that previous to this, the earth had undergone many changes;—fire and water had been active in decomposing and crystallizing the mineral substances on the globe, and many animals and plants had become petrified and fixed in their rocky beds.

The process of petrification consists in the gradual decay of the original substance of an organized being, while the place of the particles which pass off in a gaseous or other form, is supplied by stony particles, until the whole mass is thus changed. Some waters containing lime, possess the power of petrification in a high degree. The lime becoming concreted, takes the place of the original substance. Shells are often found petrified; they sometimes occur in large masses forming rocks, termed shell limestone.

It is not within the scope of these lectures, to enter deeply into geological investigations. So many important facts and interesting observations crowd upon us, when glancing at this subject, that the longer we dwell upon it, the more it seems necessary to say. I must, however interesting the theme, hasten to bring to a close our remarks on Geology, and with this, our observations upon Natural Science in general.

We have spoken of primitive, transition, and secondary rocks; of the great primitive ocean which, as is supposed, once covered the face of the whole earth while it was yet 'without form and void.'—We have remarked upon the prevalent opinion of the gradual formation of the different classes of rocks, the changes which the earth must have undergone, previous to the existence of animals or vege-

tables; and that great and sudden catastrophe which, with the exception of Noah and those who were with him, buried in one vast, watery grave, the whole race of organized beings, including man, and beast, and the vegetable tribes.

Everywhere upon and beneath the surface of the earth, are to be found traces of the deluge.—Masses of clay, sand and shells, mingled with bones and skeletons of huge animals as well as those of a less size, can be accounted for on no other supposition, than that they were thus indiscriminately thrown together by the rushing of mighty waters. Caverns are discovered whose floors are covered with the bones of hyenas, wolves, bears, and other beasts of prey, who seem to have rushed together into these retreats, to avoid the impending destruction. From the appearances of the gnawed fragments of bones, it would seem that they fell upon, and devoured each other. These remains are covered by a light mud, evidently washed over them, as the waters of the flood were subsiding.

The period before the flood is termed *antediluvial* (from *ante* before, *diluvium* flood): thus, those animals whose remains are found only in the oldest rocks, are called antediluvian relics. The ruins of the flood, the land which was then formed, and all appearances which seem the result of that event, are called *diluvial*. The various geological changes upon and beneath the surface of the earth which have taken place since the flood, are called *post-diluvial*. The deposits of soil or other changes effected by water, are called by the more general term *alluvial*.

Besides the three regular classes of rocks, and the various kinds of alluvions, there is another formation consisting of what are called Basaltic or *Superincumbent* rocks. These lie over the other rocks in strata not conformable to them. They are supposed by most geologists to be of volcanic origin: they are *Amygdaloid*, which is an aggregate of hornblende particles of a dark gray or brown color, and *Greenstone trap*, which is an aggregate of hornblende and felspar. The Giant's Causeway and Fingal's Cave in Ireland, and the Palisadoes on the Hudson river are composed of Basaltic or trap rocks. There are also other remains of Volcanoes, as lava of

various kinds, either dark colored and almost homogeneous, or of cemented grains, or whitish lava, consisting chiefly of melted felspar, and called *Trachyte*.

The various layers of clay, sand, and marl, which are supposed to have been formed before the deluge, have received the name of the *Tertiary* formation. The word Tertiary, signifying three, is given in consequence of this lying over the secondary formation.

This formation which is very extensive in France and England, has, in those countries, received much attention. 'The most remarkable discovery,' says Bakewell, 'that has been made respecting the tertiary deposits, is, that many of them contain the remains of *mammiferous** quadrupeds, as perfect in their organization as any of the existing species of land quadrupeds, but most of them belonging to genera or species that are extinct. The tertiary strata are further remarkable for presenting the frequent alternation of beds containing the remains of marine animals, with other beds that contain the bones of land animals or fresh water shells. It appears that tertiary strata were chiefly formed in detached inland seas, or lakes.'

When commencing the science of geology, a pupil may very naturally imagine that to be but a trifling study, which directs the attention to a mere stone, such as may at any time be seen in the street; he may be ready to say, 'It seems a very little thing, to know that this, a piece of rock, is granite, and that granite is composed of mica, quartz, and felspar.' If any of you have been led to entertain thoughts of a similar kind, I trust you are now convinced that it is well to suspend opinions, till you have advanced beyond the mere elements of a study. You find that geology presents a noble field for research; that it carries the mind from the consideration of rocks and mountains, to the period of their creation, and to Him who created them: you perceive them to be silent and venerable historians, which, in a language that admits of no dispute, indicate changes that the globe has undergone, many of which, but for these witnesses and

* Such four-footed animals as nourish their young with milk.

partakers, the inhabitants of the earth would have been forever ignorant.

According to the discoveries of geologists, it appears—*first*, that the whole surface of the earth was once covered by a void and formless deep. Chemistry proves that darkness and light, gasses, liquids, and solids, mingled in one universal chaos, might, according to the laws of nature, have disengaged themselves, and formed a new arrangement.

Second, it appears from geology, that the waters were gathered into their respective places, and that solids were separated from liquids; and gasses released from their unnatural union, rose by their specific levity, into higher regions.

Third, we learn from geology, that after the earth had become fitted for the support of vegetation, *plants* were created, their remains being found in older rocks than those of animals.

Fourthly, we learn from geology, that after plants were created, the '*waters brought forth abundantly*,' the remains of marine and fresh water animals being found in older rocks than those of land animals.

Fifthly, we find by geology, that at this period *land animals* were created, and that they '*multiplied greatly upon the earth*.'

Sixthly, we learn from geology, that after a long period of time had elapsed from the creation of plants and animals, the whole earth was again covered with water, which swallowed up vast multitudes of animals and vegetables, whose remains are daily becoming more and more revealed to human observation. We know too that many species and even genera of animals which existed previous to that catastrophe, are now extinct. We learn by geology, from the fact of beds of shells being found upon the highest ground at great distances from the sea, that the '*waters covered the tops of the highest mountains*;' and, from various other circumstances, it appears that they gradually subsided. Now, compare these facts as revealed by geology, with the events recorded in scripture, between the 1st and 10th chapters of Genesis, and you will find an entire corroboration of what is there recorded.

Among all the diluvial and antediluvial relics, no human bones have yet been discovered. This, however, is a fact which ought not to excite surprise, when we consider how little is known of the fossil and other ancient remains of Asia, which was the birth-place of the human race. At the period of the deluge, mankind had not probably extended far over the earth: at the approach of this event, they would naturally collect in groups for mutual assistance and protection, and in this condition probably met their fate. Seas may now cover their remains, or it may rest for future geologists to discover and bring forth the bones of those wretched and miserable beings who signally met with retribution, even in this life.

From what has been observed, you will readily see the vast importance of the discoveries of geologists and anatomists respecting organic remains; especially when taken in connexion with established facts relative to the comparative ages of the different strata or layers of rocks. If a certain tribe of plants or animals are found imbedded in a certain rock formation, while the rocks of more recent origin are never found to contain such remains, we must believe they were of more ancient date than the species found in newer rocks.

‘If it had been predicted a century ago, that a volume would be discovered, containing the natural history of the earliest inhabitants of the globe, which flourished and perished before the creation of man, with the distinct impressions of the forms of animals no longer existing on earth,—what curiosity would have been excited to see this wonderful volume; how anxiously would Philosophers have waited for the discovery! But this volume is now discovered; it is the *volume of nature*, rich with the spoils of primeval ages, unfolded to the view of the attentive observer in the strata that compose the crust of the globe.’ *

This interesting branch of Natural History has hitherto been little introduced into female seminaries; the reason of this is, undoubtedly, the want of popular, elementary treatises on the subject; as this want shall be supplied, it is to be hoped that a study which so powerfully

* Bakewell.

confirms the truth of revelation, and which so evidently tends to elevate and enlarge the mind, will no longer be considered unnecessary, or unimportant.* All who study nature, must, with the poet Montgomery, feel that

‘There is a voiceless eloquence on earth
Telling of Him who gave her wonders birth;’—

And all such will be ready to exclaim with him,—

‘And long may I remain the adoring child
Of Nature’s majesty, sublime or wild;
Hill, flood and forest, mountain, rock and sea,
All take these terrors and their charms from Thee.
From Thee, whose hidden but supreme control,
Moves through the world, a *Universal Soul*.’

LECTURE XIX.

Mathematics—Arithmetic—Algebra—Geometry.

IN commencing my remarks on the study of Mathematics as a branch of female education, I shall introduce a passage from Hannah More’s *Strictures*, which will show you the state of our sex as to intellectual improvement at the beginning of the present century, with the opinions of one deserving of deference and respect, as to the proper means by which the existing evils might be remedied. ‘Women,’ says Mrs. More, ‘are little accustomed to close reasoning on any subject; still less do they inure their minds to consider particular parts of a subject: they are not habituated to turn a truth round, and view it in all its varied aspects and positions; and this is one cause of the too great confidence they are disposed to place in their own

* Since this lecture was delivered, the author has been engaged in making some additions to a small work written by the author of the *Child’s Botany*, and entitled the *Child’s Geology*. This will soon be given to the public. Should the author of these lectures be enabled to fulfil her present intentions, a work on *Geology*, adapted to female seminaries, for which she has six years been collecting materials, will be soon prepared for publication.

opinions. Though their imagination is already too lively, and their judgment naturally incorrect; in educating them, we go on to stimulate the imagination, while we neglect the regulation of the judgment. They already want ballast, and we make their education consist in continually crowding more sail than they can carry. Their intellectual powers being so little strengthened by exercise, makes every little business appear a hardship to them: whereas serious study would be useful, were it only that it leads the mind to the habit of conquering difficulties.'

In another part of her work, Mrs. More says, 'The chief end to be proposed in cultivating the understanding of women is to qualify them for the practical purposes of life. The great use of study with them is to regulate their minds and render them capable of fulfilling the duties of life. To woman therefore I would recommend a predominance of sober studies, those which will teach her to elicit truth; will give precision to her ideas; will make an exact mind, which instead of stimulating her sensibility, will chasten it; which will give her definite notions; will bring her imagination under dominion; will lead her to think, to compare, to methodize. Economy is the exercise of a sound judgment, exerted in the comprehensive outline of order and arrangement. She who has the best regulated mind will, all other things being equal, have the best regulated family.'

It had not probably entered into the mind of the excellent woman whose judicious observations have just been quoted, that her sex, in thirty years from the time in which she advanced these ideas, would be admitted by general consent to share in those pursuits, which have the most undoubted tendency to produce the effects which she desired—a tendency to sober the imagination, develop the reasoning powers, and strengthen the understanding, so apt in the female character to be biassed by prejudice or borne on the gossamer wing of a lively fancy into the regions of error and folly. Mrs. More recommended the reading of Watts on the Mind, Butler's Analogy, and other writings of a grave and metaphysical

character; but she did not, (if indeed she was aware of their superior importance as aids to mental discipline) dare to speak of the higher branches of mathematics.

Watts observes that 'Mathematics have a strange influence toward *fixing the attention of the mind, and giving a steadiness to a wandering disposition*, because they deal much in lines, figures and numbers, which affect and please the sense and imagination.' The same writer, in speaking of the tendency of the mind to '*narrow and low conceptions*,' remarks that 'this defect may be remedied by beginning with the first principles in geometry, and proceeding to the doctrine of quantities, which are infinite and innumerable. A little acquaintance with true philosophy and mathematical learning, would soon teach the mind that there are no limits either to the extension of space, or the division of body, and would lead it to believe that there are bodies amazingly great or small beyond their present imagination.' The same writer further observes, '*It is owing to the narrowness of our minds, that we are exposed to the same peril in the matters of human prudence and duty*. In many things which we do, we ought not only to consider the mere naked action itself, but the persons who act, the persons towards whom, the time when, the place where, the manner how, the end to which the action is done, together with the effects that must, or that may follow, and all other surrounding circumstances; these things must necessarily be taken into view, in order to determine whether the action, which is indifferent in itself, be either lawful or unlawful, good or evil, wise or foolish, decent or indecent, proper or improper.'

Females have been said, and not without reason, to be fluctuating in purpose, desultory in action, and unsettled in principle. Possessing vast power over the destinies of the world, by their influence as wives and mothers, they have often been the cause of contention and misery among nations, and of agitation and disquiet in the more limited domestic sphere. Of how much importance to the well-being of mankind is it, that this fickle, restless, yet powerful being should become consistent and reflecting, and learn to exercise her

influence for the good of society. And how shall this be done? The question is answered by Watts, Locke, Stewart, and all other judicious writers on the power of education upon human character; for all have united in giving their testimony to mathematical studies, as one of the most important aids to mental discipline.

But it may be said, that these writers did not intend to apply their remarks to female education; that it was for the other sex for whom they wrote. Strange indeed, if the nearer the mind of man resembles in its organization that of woman, the more he should be required to follow investigations calculated to fix the attention and strengthen reason, while for woman herself, this should be considered unnecessary and improper.

Women are often reproached for their *limited views, their low and narrow conceptions*; true it is, that their sphere of action tends to such results. The minute objects towards which their attention is necessarily directed, the routine of their domestic duties and occupations have a tendency to contract their minds.—How shall this be remedied? Let the direction of Watts on this subject be our answer. Although in his day he could not have anticipated this application of his remarks, yet had the appeal even then been made to his judgment in behalf of women, I am persuaded the justice of his character and the benevolence of his heart would have secured a verdict in their favor.

Again, with respect to ‘our conduct in matters of prudence and duty,’ as Watts expresses it; ‘it is owing to the narrowness of our minds, that we are exposed to peril here.’ What human being more needs a sure guide in matters of prudence and duty than woman? Caressed and flattered, and yet watched with jealousy and suspicion—thrown off her guard by the most tender indulgence, while the slightest shadow of imprudence renders her liable to misconstruction and reproach,—does she not need an unerring standard of rectitude in her own bosom, a clear and acute sense of her own actual condition; prudence to direct her in the path of duty, and fortitude to sustain her under various trials? The mode of discipline by which the human mind may be brought to a calm, ration-

al and dignified state, is pointed out in the passage of Watts to which we have referred. An enlarged and extended view of our various duties and relations towards ourselves, our friends, society, and especially towards our Maker, accompanied with virtuous principles and disciplined minds, cannot fail to secure respectability in this world, and happiness in a future state.

We are far from considering mathematics as the only instrument of that mental discipline which we feel to be so necessary for our sex; every branch of education, which has a tendency to fix the attention, to impress truth upon the mind, and to produce the habit of reasoning closely and consecutively, is of importance in this view. We have already spoken of the studies of grammar, languages, geography and history, as auxiliaries in this great work. The studies of natural science, mental and moral philosophy, are all of great utility in the formation of character: but the study of mathematics has, by philosophers, been considered the most direct way of controlling the imagination, perfecting reason and judgment, and inducing a habit of method and love of order.

The term mathematics is derived from the Greek verb *matheo*, to learn. This science treats of quantity or whatever can be measured, as in geometry, or numbered, as in arithmetic and algebra. Mathematics is divided into *pure* and *mixed*; pure mathematics is the abstract consideration of quantity, without any reference to matter; mixed mathematics treats of magnitude as subsisting in material bodies, which are subject to certain laws, a knowledge of which constitutes natural philosophy. Mathematics here becomes united to natural philosophy, and hence arises the term, *mixed* mathematics. The reasoning in mathematics is of that kind called *demonstrative*, or that which admits of positive proof. Thus the truths developed in the reasoning of the first proposition of Euclid admit of no more dispute than the axiom that things equal to the same, are equal to one another; the latter is self-evident, or apparent without any reasoning; but the truth of the former is not evident without the intermediate steps used in the reasoning.

Moral reasoning is of a different kind, and cannot be

rendered thus positive. Dr. Paley asserts that ‘virtue is the doing good, in obedience to the will of God, and *for the sake of everlasting happiness.*’ Now if he could have proved this by a train of reasoning founded upon a self-evident proposition, no one would distrust the assertion; yet many do dispute it, which shows that it is not proved to complete demonstration, for the human mind cannot dispute such evidence. Some moral truths do however seem to admit a proof equal to demonstration. Thus the existence of God is demonstrated, from the existence of matter, which could not have created itself. Taking then for an axiom or first truth, what seems self-evident, we would say that matter must have been made—it cannot have made itself, therefore since it does exist, it must have had a *maker*; this maker we call God. Yet an atheist might object to what we called a self-evident truth—he might say, we are not certain that matter has not existed from eternity. He may of course object to our reasoning, if he does not consent to our premises or the foundation of our arguments. Yet demonstrative reasoning is not to render us unbelieving on moral subjects; but the rather, tends by accustoming the mind to deliberate investigation and careful comparison of proofs, to detect the true from the false, even in moral reasoning.

Mathematics is peculiarly a science of comparisons; these comparisons are always exact and may be made manifest to the senses. When it is said there are fifty yards of ribbon in a piece, there is an exact and sensible comparison between the ribbon in the piece, and the length of the yard measure, fifty times repeated.

A French writer* says, ‘is it not certain that a young person accustomed to the justness and accuracy of mathematical demonstrations, habituated to exercise his intellect in discovering the connexion of ideas in a train of reasoning in order to prove a truth, is it not certain that such an one will carry into the world a penetrating and observing mind; that he will pursue other studies with greater facility, when his judgment and all his intellectual facul-

* Delpierre du Tremblay, author of *Lettres sur les Etude, et sur leur Rapport Avec L'Entendement Humain.*

ties have been exercised and strengthened by mathematical investigations. Many persons who have not sufficiently reflected upon the manner in which our faculties can be exercised to the greatest advantage, and upon the assistance which the sciences mutually render to each other, say that the mind can pursue any science to which it gives attention, that it is but lost time to occupy it with mathematics instead of the profession which is to be the business of life. But has the mind always the capacity for the study of any kind of science? Is it not necessary to form the judgment by preliminary studies? And are not the mathematics the best means of accomplishing this, and the method of reasoning and investigation acquired in this science a most important aid in all others?' Suppose of two young persons of equal talents, and who have devoted equal time to study, the one is a geometrician, and the other has given her time more to other branches of knowledge—suppose these two commencing together some new science, botany, chemistry, or mental philosophy, we shall soon perceive the great advantage which the knowledge and practice of mathematical reasoning gives the one, over the other, in the mode of arranging facts, of developing truth, and performing such mental analyses as are necessary to disentangle, and bring to light the most complicated subjects. For the greatest discoveries, which have enlightened the world we are indebted chiefly to those powerful minds which have first strengthened and invigorated themselves at the fountains of mathematical knowledge; Descartes, Mallebranche, Gallileo, Kepler, Bacon, Locke, Newton, and Fontenelle. Plato wrote over the entrance into his school, 'He who has not studied the Elements of Geometry cannot enter here.'

Arithmetic and Algebra.

Arithmetic is the lowest and most simple branch of mathematics. The word is derived from the Greek *arithmos*, signifying number. It is the science of *numbers*. Arithmetical calculation signifies operations performed by various modes of *adding, subtracting, multi-*

plying or *dividing*. The word calculation, (in French called *calcul*,) is derived from a Latin word signifying little stones, because the ancients used such, instead of figures in their arithmetical computations. All our numbers are expressed by different arrangements of the cipher and the nine figures, called digits. These were learned from the Arabians, who are said to have derived their knowledge from countries still farther east. The Greeks and Romans used the letters of their alphabet to express numbers. Thus, instead of the Arabic character for 1 they used the letter I; for 2 they used II; for 3, III; for 4, IV, &c.

Of all the sciences, arithmetic is perhaps the most ancient, it having been taught by the Egyptians 600 years before Christ. It is said they attempted to explain everything by numbers, and even thought that an accurate knowledge of these would conduct them to the fountain of divinity, to God himself.

It is unnecessary to urge the importance of this study as a branch of female education, since this is universally admitted; but it cannot be unnecessary to recommend a more practical use of it than is generally made. I should blush for any pupil of this institution, who, after having studied arithmetic even but a short time, should be found ignorant of the proper method of keeping an account, or of making out a bill. The practical object of arithmetic is to teach you to do those things. It should also have a moral influence on the conduct by teaching you to regulate your expenses according to your income. Many a man has been ruined because his wife and daughters have not practised arithmetic; and there are those, who resorting to dishonest methods for procuring wealth, have dragged out in a state's prison a miserable existence, which economy in their family might have rendered virtuous and happy. Suppose that a man in business earns a thousand dollars a year; which is probably as large an income, as, upon an average, is received by clergymen, lawyers, physicians and merchants in this country;—in many cases, from this income, house-rent is to be paid, fuel and provisions furnished, children to be educated, and a family clothed. What, in such a situation, should be the manage-

ment of a wife and daughters? Perhaps some may reason something in this way,—my husband or father has an income of a thousand dollars; now, I want this shawl which costs only thirty dollars, or this bonnet which costs only twenty, and this will be but a very little part of the yearly income.—I am sure it can be easily spared. But if the calculation was first made, how much of this sum must be expended in necessities, it would be at once seen that very little could be afforded for superfluities.

Arithmetic teaches only the properties of numbers which *are known*; its calculations are carried on by the use of figures; but in Algebra, *letters* are made to represent quantities that *are unknown*. It takes for granted the unknown quantity sought, and by means of one or more given quantities, proceeds, until the supposed quantity is discovered by some other known quantity to which it is equal. The first letters of the alphabet, *a, b, c, &c.* are commonly employed to stand for known quantities—the last, as *x, y, &c.* for unknown. By this process, many questions are solved, which could not have been done by simple arithmetic. A knowledge of algebra is necessary in geometry, mechanics, astronomy, and all branches of science which depend on mathematical demonstration. To those who desire a thorough education, a knowledge of algebra must therefore be deemed of importance, since it leads the way to so many other sciences. Not that some knowledge of astronomy, natural philosophy, and geometry may not be acquired without the assistance of algebra; but this knowledge must necessarily be limited and imperfect.

Arithmetic may be considered as a germ, which contains within it the principles of algebra. The two sciences are intimately connected; a knowledge of the one throws light upon the other. Arithmetic being the more simple, some knowledge of it should be possessed before commencing algebra. Every step then taken in the latter science, will throw light upon the former, and processes which, performed by arithmetical rules, appeared tedious and complicated, may, by algebraic principles, be rendered clear and simple. Besides the prac-

tical uses of this science, the accurate analysis which it teaches, is an important means of intellectual discipline.

Some would refer the origin of algebra to Plato, because he first taught the principles of analysis, which are so necessary to the existence of this science; but it is generally attributed to the Arabians, from whose language the word *algebra* is taken. In its original meaning, it signifies a reduction of fractions. The first treatise on algebra is said to have been written by Diophantes, a philosopher of Alexandria, who lived in the reign of Antoninus, toward the middle of the second century. In the fifth century, Hypasia, the daughter of Theon, a celebrated geometrician, published a comment on the treatise of Diophantes. This comment a learned French mathematician notices as 'exhibiting a depth of thought, of which few men are capable.' Hypasia may be considered the first, who brought the science of algebra into a regular system. This woman, whom the same writer calls the 'honor of her sex,' was professor in the famous school at Alexandria, and filled with distinguished credit, a place which had been rendered illustrious by many great and learned men. The people, stirred up by some persons, envious of Hypasia's fame, accused her of political intrigues, and cruelly murdered her in the professor's chair. As the acquirements of this woman are recorded in history, as a wonderful phenomenon, we infer the general prevalence of ignorance among the females of that period.

Geometry.

Geometry, an important branch of mathematical science, takes its name from two Greek words, *ge*, land or earth, and *metron*, measure, signifying to measure land. This science is supposed to have originated in Egypt. According to two very ancient historians, Herodotus and Strabo, the inundations of the Nile carrying away their land-marks, the Egyptians invented the art of measuring and dividing their lands, in order that each might distinguish his own territory, by its particular figure, and the surface which it was known to contain.

Thus imperfect was geometry in its origin, commencing by a series of observations which were confined to actual substances. By degrees mankind began to generalize their observations of particular facts, and geometry became a noble and exact science, constituting a firm basis on which many other sciences are founded.

Geometry is the science of extension, and not only signifies the measuring of land, but of the heavens also; for by its aid, astronomers have been able to ascertain the dimensions of the heavenly bodies, the space through which they travel, and their distance from each other. All the truths and reasonings of geometry are founded on a few simple truths which are self-evident to all who possess common understanding. They cannot be explained, since there are no truths of a more simple kind by which they may be illustrated. Any person who does not perceive that a whole is greater than a part, or that two things equal to a third, must be equal to one another, must be considered as wanting in what is expressively termed *common sense*. Thus it is that in children who prove to be idiots, it is usually first observed that they do not understand these simple, or as philosophers call them self-evident truths. If a child old enough to comprehend the term *one*, does not understand that one and one make *two*, we have reason to fear that it has no understanding, or, in other words, is a fool. Thus the ready comprehension of self-evident mathematical truths, and the power to reason from these to less simple truths, is considered as a test of a clear and sound understanding.

Our sex have been allowed to possess the faculty of imagination, and the affections of the heart, in a superior degree; but we have been thought deficient in reasoning powers. Now it is the reasoning faculty which distinguishes the human species from the brutes: if woman is in reality devoid of this noble faculty, then is she a kind of intermediate link between man and the brute creation—and the Christian religion, like the Mahometan, should have provided in a future state some *middle region* for this being, who is neither to be, like the brutes annihilated, nor like the nobler part of creation, entitled

to a rank among superior intelligencies. But it is unnecessary to urge anything on this point: women have now little to complain of, with respect to liberality of feeling towards them, on the subject of education. Advantages are now placed before them; they may prove the strength of their reasoning powers, in the study of mathematics, of logic, and even metaphysics, without fear of reproach for attempting to pass the limits, which nature has assigned for the operations of their minds. It is for you, young ladies, who are here assembled, to prove by your own example, that knowledge is not to be a curse to your sex; that it is to lead them *in* the path of duty, not *out* of it; that it is to make them better daughters, wives, and mothers; better qualified for usefulness in every path within the sphere of female exertions. By being enabled to see more clearly the peculiar obligations which devolve upon you in your various relations, and to discern the boundary between your duties, and those of the other sex, shall it be that you will the more seek to pass that barrier, which the Almighty himself in the peculiarities of physical as well as mental constitution, has established between the sexes? You are not called upon to lead armies, to make and execute laws, and to preside over public safety. But you may be called upon to preside over the domestic circle, to regulate families by your wisdom, and to guide and enlighten the youthful mind:—in the proper performance of these duties, will you need all that clearness of reason, and solidity of judgment to which a thorough and well-conducted education may conduce. The object in all attempted improvements in female education, should not be to lead woman from her own proper sphere, but to qualify her for the better discharge of those duties which lie within it. It is for you to prove by meek and gentle manners, by your pious walk and conversation, that the daughters of Eve may eat of the tree of knowledge, without danger or sin. No law, divine or human, forbids that the female mind should seek to penetrate the mysteries of science—and may we not hope that the sad consequences of the disobedience of the first woman, will, in some degree, be averted from the earth, by enlightening the minds of her daughters?

But we have wandered from our immediate subject, in following a train of thought which naturally presented itself. We have spoken of the origin and meaning of geometry. It remains briefly to trace its progress. From Egypt, it is said to have been carried to Greece by Thales, who, not satisfied to teach the Greeks what he had learned from the Egyptians, enriched the science with many propositions of his own. Pythagoras afterwards successfully cultivated geometry, and added to it, among other propositions, that of the square of the hypotenuse. Anaxagoras and Plato studied to explain the quadrature of the circle; but Euclid, who lived four hundred years before Christ, and fifty after Plato, collecting all the truths that his predecessors had discovered, and adding many of his own propositions, may be considered as having established the science on a firm foundation. Of all sciences, none now remains so nearly as it existed in ancient days as that of geometry. The work of Euclid, although many improvements have professedly been made, still remains much as he left it.

We shall not consider the subject of *Mixed Mathematics* separately. Those of you who are now studying these subjects, as illustrated in Enfield's Philosophy, are making a practical application of algebra and geometry. You should as far as possible connect with your investigations the idea of actual substances; for the mere theory of mechanics or optics is of little use, without a knowledge of their applications to the common objects around you. I recently heard a young lady, who had studied optics, call that a *shadow* upon the water, which was a *reflection*. Females are not, in general, as practical as the other sex; they are much less abroad, where the operations and phenomena of nature may be observed, and they find it more difficult to transfer their views from their books to nature. Those of you who are studying Enfield, might learn much practical science from an unlettered farmer or mechanic, who, although he could not explain the principles of motion and force by mathematical demonstrations, might yet teach you many useful facts, learned by experience and observation.

In concluding this lecture, I would remark that it is far

from my intention to depreciate those many excellent and elevated women, who have honorably discharged their duties in life, without a knowledge of mathematics, or without those advantages for mental improvement which females at the present day enjoy;—such cases do not invalidate any of the arguments we have offered on this subject. These are the very women, who, with lofty views of female duty and influence, and a strong sense of the weakness of their sex, would be the first to plead that they might be better fitted to discharge their duties, to exert a beneficial influence, and that their minds might be strengthened and fortified by a judicious and liberal education.

LECTURE XX.

Rhetoric, Criticism, Composition.

THE studies of Rhetoric and Criticism, are more especially designed for the cultivation of those faculties of mind, called *taste* and *imagination*. Taste has by many writers been termed a simple independent power or sense; but by Dr. Brown it is considered as a complex state of mind, which may be analyzed into *judgment* and an *emotion*. The human mind is formed with a susceptibility of certain emotions, as beauty, sublimity and ludicrousness; these emotions are those on which taste chiefly depends, or which, in conjunction with judgment, constitute taste. Thus a painter, having experienced the emotion of beauty, exercises his judgment in forming such combinations as may produce in others the same emotion. A poet must have experienced emotions, before he can by an effort of art produce them in others; and he exercises his judgment no less in the selection and combination of his images, than the chemist, who puts together substances in order to produce a certain result. That is, both the poet and chemist judge of the fitness of ideas and of objects to produce their determinate effects.

For a clear and interesting explanation of the elements of taste, and of its three most essential qualities, refinement, delicacy and correctness, I would refer you to the interesting and useful system of Rhetoric, now adopted as a class book in this Institution.* The author of this work has taken up the subject in a philosophical and practical manner. He at once informs the student that the art of writing well, is not to be obtained by a set of rules, but that 'the store-house of the mind must be well filled; and he must have that command of his treasures which will enable him to bring forward, whenever the occasion may require, what has been accumulated, for future use.' He dwells particularly upon the necessity of mental discipline, especially the previous cultivation of the reasoning powers; and observes that 'the student who, in the course of his education is called to search for truth in the labyrinth of metaphysical and moral reasonings, and to toil in the wearisome study of the long and intricate solutions of mathematical principles, is acquiring that discipline of the mind, which fits him to distinguish himself as an able writer.

You will perceive that the different branches of knowledge we have already considered, are all conducive to one great end, that of enabling a person to compose with elegance and facility. And is this an object of little importance, even to our sex? We are permitted to use the pen as our tastes, genius, or mental acquirements may direct. Even the composition of a simple note of ceremony, attests the fact of mental cultivation, or the want of it; and a letter on the most common subject, plainly indicates the nature of the writer's education. Higher efforts of mind, such as stories for children, religious tracts, and works in the various departments connected with education, are all now considered as offering proper employment for the exertion of female talents. But it must be remembered that these talents should be cultivated with the most assiduous care—that the various fields of knowledge should be explored, as far as possible, in order to become a successful candidate for literary distinction. The time has gone by, when a publication

* Newman's Rhetoric.

meets with indulgence, because its author is a *woman*; we must now expect to be judged by our real merits, and our titles to approbation.

Grammar and rhetoric bear to each other an intimate relation; the former teaches the method of speaking and writing with accuracy, the latter of arranging our thoughts with propriety and elegance. The science of rhetoric is founded upon observations made by philosophers, of the nature and operations of the human mind, and by a critical analysis of the style, and an examination of the methods of arrangement of those authors whose works have been most generally approved. The chapter on Literary Taste in Newman's Rhetoric is well written, and calculated to give just ideas of the peculiar merits of different authors; it also happily illustrates the proper use of rhetorical figures. The chapter on style, is an interesting exposition of the qualities of a good style, and the modes of writing which characterize different individuals. This little work leads the pupil to a knowledge of the rules and principles of rhetoric, in an easy and simple manner, and has the merit of more originality than many school books, which profess to be improvements.

Blair's Lectures on Rhetoric have been deservedly popular: they are written in a pure and concise style; but the larger work is too voluminous for beginners, and the abridgement, as is usually the case, is a mere skeleton, without suitable illustrations.

In pursuing the study of rhetoric, you should make it your constant aim to render your knowledge practical: you should examine authors, with a view of discovering their peculiar beauties or defects, and notice their use of the various figures of speech; each of which you should accustom yourself to distinguish, wherever you meet them. This might be rendered interesting as an amusement. When several young ladies are passing leisure hours together, one might ask others to point out, in a certain page or chapter of a book, all the comparisons, metaphors, antitheses, &c. which could be found. The suggestion and proper uses of figures, must be the result of much practice in composition, as well as the fruit of learning. The study of rhetoric will not at once give you the power of

writing with ease and elegance : this requires a knowledge of nature and of the human heart, a habit of deep and serious reflection, and a taste at once delicate and refined.

Criticism is ranked in this institution as a higher study than the elementary works on rhetoric ; it is indeed a department of rhetoric, but so extensive, that it has been treated separately by some distinguished writers. The best works on this subject which are now before the public are those of Kames, Alison, and Campbell. Kames' *Criticism* contains much valuable philosophy ; the author appears to have studied the human heart with considerable success : his style is agreeable and he carries his reader along with him in an easy companionship. The study of this work is an excellent preparation for mental philosophy ; indeed it was, by the author, designed to hold a middle rank between moral speculations and the study of the natural and mathematical sciences. Without attempting a theory and classification of the passions, Lord Kames gives a variety of practical illustrations of their operations and moving principles ; and such as are calculated to be of great use to a young person on entering into life. The greatest objection to his work on criticism is the occasional obsolescence of the style, (the third edition was published as far back as 1761) and a want of system in his arrangements. These faults may be remedied by the remarks of teachers, and care on their part to make a better arrangement. The practical part of criticism will not probably be acquired in a very great degree by the study of Kames, or any other author ; but a new stock of ideas may be gained, and the power of making for yourselves critical distinctions.

Alison is a writer of peculiar beauty and sweetness : the fault in his work, as a text-book on criticism, is that he confines himself to the subjects of beauty and sublimity, a sphere too circumscribed for so extensive a science. The politeness and respect with which Alison speaks of the 'profound remarks of Lord Kames,' furnish a pleasant contrast to the illiberality with which writers often speak of those who have preceded them in any particular department of literature. The whole work of Alison is

replete with beautiful passages, calculated to inspire the reader with noble and just sentiments. In his essays upon the beauty and sublimity of the material world, he leads the mind to the delightful contemplation of nature and the Author of nature. After expatiating on the moral effect of the study of nature upon the mind, he finely and piously observes 'there is yet, however, a greater expression which the appearances of the material world are fitted to convey, and a more important influence which, in the design of nature, they are destined to produce upon us: their influence, I mean, in leading us directly to *religious* sentiment. Had organic enjoyment been the only object of our formation, it would have been sufficient to establish senses for the reception of these enjoyments. But if the promises of our nature are greater—if it is destined to a nobler conclusion—if it is enabled to look to the Author of Being himself, and to feel its proud relation to Him; then nature, in all its aspects around us, ought only to be felt as signs of his providence, and as conducting us, by the universal language of these signs, to the throne of the DEITY.'

After remarking upon the effect of natural scenery upon elevated minds, he adds: 'Even the thoughtless and the dissipated yield unconsciously to this beneficent instinct; and in the pursuit of pleasure, return, without knowing it, to the first and the noblest sentiments of their nature. They leave the society of cities, and all the artificial pleasures, which they feel to have occupied, without satiating their imagination. They hasten into those solitary, and those uncultivated scenes, where they seem to breathe a purer air, and to experience more profound delight. They leave behind them all the arts, and all the labors of man, to meet nature in her primeval magnificence and beauty. Amid the slumber of their usual thoughts, they love to feel themselves awakened to those deep and majestic emotions which give a new and a nobler expansion to their hearts, and amid the tumult and astonishment of their imagination,

To behold the present God
On the rocks by man untrod,

On the hill-tops wild and rude,
On the cliff's deep solitude.
Where the roaring waters move,
In the darkness of the grove.'

It is particularly on account of its moral effect that it is of so much consequence to encourage their instinctive taste for the beauty and sublimity of nature. While it opens to the mind of childhood, or youth, a source of pure and of permanent enjoyment, it has consequences on the character and happiness of future life, which they are enabled to foresee. It is to provide them, amid all the agitations and trials of society, with one gentle and un-reproaching friend, whose voice is ever in alliance with goodness and virtue, and which, when once understood, is able both to soothe misfortune, and to reclaim from folly. It is to identify them with the happiness of that nature to which they belong; to give them an interest in every species of being which surrounds them; and, amid the hours of curiosity and delight, to awaken those latent feelings of benevolence and of sympathy, from which all the moral or intellectual greatness of man finally arises. It is to lay the foundation of an early and of a manly piety: amid the magnificent system of material signs in which they reside, to give them the mighty key which can interpret them; and to make them look upon the universe which they inhabit, not as the abode of human cares, or human joys only, but as the temple of the LIVING GOD, in which praise is due, and where service is to be performed.

Composition.

The study of Belles Lettres, or of rhetoric and criticism is introduced into education, principally for the purpose of improving the young in the art of composition. It is indeed pleasant to be able to judge of the performances of others, to know the causes of our approbation or disapprobation of literary works, to enter into the secrets of the mind, and explore its mysterious laws, to compare the productions of genius with those rules which nature suggests, and to observe the uniformity of her operations in

all well organized minds : all this is agreeable ; but it is still more desirable, still more delightful to be able of ourselves to *execute*, to be able to catch the ideal train, as they glide through our minds, and paint them in all their freshness and originality for our own future examination, or for the inspection of others.

Of all the enjoyments granted to mortals, this is probably the most exquisite and the most elevated ; to behold before us the image of our own minds, the glowing transcripts of our own thoughts, as delineated by ourselves ; it seems to assimilate us in some degree with the great Creator of mind, when we are able to render its operations visible. Many who are conscious of elevated thoughts are destitute of a power of expression suited to these ; many in whom the fire of genius is smothered by ignorance and prejudice, feeling within themselves the workings of a latent intellect, sigh for education as the greatest of human blessings, the means of elevating the mind and rendering its operations sources of the highest enjoyment. Under the greatest disadvantages, the light of genius has occasionally burst forth, discovering upon the shoemaker's bench a tuneful and sentimental Bloomfield, or at the plough a noble and high-souled Burns. But instances are rare in which unaided genius acquires the confidence to come forth, and try her pinions : education is required by most minds in order to give the courage and skill necessary for effort in the regions of composition. And besides, we must acknowledge that genius is not a common gift ; I mean that fire which, unless it can have vent, consumes the soul. And in this we see the goodness of our Creator ; for genius is of too fine, too exquisite a nature to bear the rude contact of worldly things ; it droops and folds its wings when calamities assail ; even the imaginary sufferings of a flower transplanted from its own home, a rose plucked from its parent stem, or the agonies of a poor worm or insect, are sufficient to call forth its tender and plaintive wailings,—how then can it look upon human sufferings, poverty, oppression, injustice, treachery, pain and death ? Indeed we often see that mind which exhibits unequivocal marks of genius, early fading away, as if the atmosphere of the world were too

cold for its sensitive nature ; thus have Henry Kirk White and Lucretia Davidson,* and many others gradually sunk to an untimely grave, apparently through an excess of sensibility.

But is there no remedy for this? Must the fairest and best of human blossoms be given up to be chilled by the frosts, and blighted by the mildews of an ungenial world? Let a suitable and proper direction be given to sensibility, and it may be disciplined and chastened. Let education be properly conducted, and then will *reason* and *judgment* be brought to sustain and guide the trembling, aspiring etherial spirit, which is ever shrinking from real evils and refusing to look with steady eye upon the obstacles in the pathway of life. But, supported by reason and judgment, *sensibility* may learn to encounter evils and to overcome difficulties ; especially does she need the aid of *religion* to reconcile her to earthly sufferings, in view of a happier future. I have spoken of sensibility, because I believe it always belongs to true genius, and to be the cause of those frequent failures in life which are observable among those who are highly gifted ; but a proper mode of education may do much towards chastening, and giving it a right direction.

Lucretia Davidson, the lovely girl whose precocious powers have been the admiration of many, probably fell a victim to an extreme and morbid sensibility : many of you are aware that several years since, she was a member of this institution ; some of you may remember her personally. She had, in her childhood, been indulged in her fondness for seclusion and solitary musings. Her education, owing to peculiar circumstances, had not been systematically and thoroughly pursued. On her entering the Seminary, she at once surprised us by the brilliancy and pathos of her compositions,—she evinced a most exquisite sense of the beautiful in the productions of her pencil ; always giving to whatever she attempted to copy,

* Miss Davidson died at about the age of seventeen ; a volume of her posthumous works, entitled ‘ Amir Kahn, and other Poems,’ has received much praise from critics. The British Reviewers spoke of it as an extraordinary production, comparing her to their favorite and lamented White.

certain peculiar and original touches which marked the liveliness of her conceptions, and the power of her genius to embody those conceptions. But from studies which required calm and steady investigation, efforts of memory, judgment and consecutive thinking, her mind seemed to shrink. She had no confidence in herself, and appeared to regard with dismay any requisitions of this nature. Even in geography, which was one of her studies, she found a difficulty in preparing herself for recitations. At the approach of an examination, she was agonized with the fear of disgracing her class by her appearance ; and in order to calm her apprehensions, I had promised to ask her very few questions. When it came her turn to recite, instead of taking the subject next in order, which would have been an explanation of the ' geological structure of the globe,' and which the poor trembling girl had never felt an interest in knowing, I asked her to give some account of the peculiarities of the torrid zone. Miss Davidson's countenance brightened : she begun with the sweetest tones of voice to describe the vegetable wonders of those regions, the spreading bananas, the lofty bamboo trees, forests rendered impenetrable by the luxuriance of vegetation, and blooming with perennial verdure and beauty. She spoke of the mighty elephant, the hippopotamus, rolling his enormous bulk along the rivers of Africa, the fierce lions and tigers, poisonous reptiles and ensnaring crocodiles, the great anaconda, winding his huge coils around his helpless victim ; nor did she fail to describe that dreadful vampyre, which seeks the traveller in his hour of sleep and gluts itself with his blood. She then, with a new and kindling emotion, spoke of the brilliant fire-flies which illuminate those regions in the night as with a mass of liquid light, of the bounding antelope, and of the beautiful gazelle, whose brilliant and fascinating eyes are the admiration of the beholder.

So vivid in my mind is the recollection of her animated and enthusiastic manner at that time, the bright flashing of her dark eye, and the glow of her brilliant complexion, that the conception appears like reality, and it seems as if she now stood before me, the living image of youthful genius and sensibility. But the grave has for many years

shrouded her form, once so interesting. We may not imagine the process which is going on in that dreadful laboratory, where the elements which compose the human body are separated and set free to enter into other combinations ; we will rather say with the poet,

‘ Not to the grave my soul,
Not to the grave descend to contemplate
The form that once was dear ! ’

it is better to think of the spirit as disencumbered of its load of clay, and an inhabitant of a purer world.

I have introduced the character of this young lady to show you the great importance of early mental discipline ; for, lovely as genius and sensibility may be, in order to be useful, in order to be fitted for life, they must be sustained by the other mental powers. We see the evils of suffering any one department of mind to usurp unlimited power over the other. If one could not be a fine writer, without becoming unfit for the duties of life ; if talents were necessarily connected with eccentricities, I would at once warn all my sex from attempting to acquire these dangerous gifts ; but I trust it is unnecessary for me to point out the many ladies who at this time hold an important standing in the literary world, and are yet among the most active supporters of social and religious institutions, who are equally distinguished for domestic virtues as for high mental endowments.

But we are yet to go back to the first attempts of the pupil in the art of composition ; this it is necessary to do for the benefit of the younger members of the institution, and of some others to whom the idea of writing compositions is new and appalling.

Those who are studying languages, will derive great assistance in composition from the habit of translating. It appears to me that this advantage has not been sufficiently estimated : were it indeed the only one, I should think it a sufficient compensation for the labor which is necessary in acquiring a language. If you take a fine passage of a Latin or French author, and attempt to translate it, the mind, gradually seizing upon the ideas, seems to adopt them as its own ; and feeling itself elevated by this new acquisition, becomes capable of greater efforts.

In translating, particular attention should be paid to the exact import of words; thus, the word *sentiment* which in English is applied to opinions, is in French restricted to the feelings of the heart, it being derived from the verb *sentir*, to feel. The French would not then speak of *political sentiments*, but *political opinions*; they would speak of a sentiment of gratitude or love: when you reflect on the origin of the word sentiment, you will perceive that there is a propriety in making this distinction between this word and *opinion*, which is derived from a Latin verb signifying to believe. To those of you whose understanding and observation have not furnished you with a stock of ideas for composition, translation may be recommended as a substitute, until you shall have acquired the confidence and ability to compose.

I am aware that of all your exercises, many of you find original composition the most difficult; indeed it is not strange you do so; when you write, you can only express by written characters the thoughts which you have gained by reflection and observation. If you have reflected or observed but little, your stock of intellectual wealth must be small; and who can impart to others that which they do not possess? It may be said, then, why should we be required to write compositions before we are capable of writing well? I answer, that if you have but a small capital to begin with, your stores will increase by use; but permit me to caution you as to a choice of subjects; for beginners in composition, often choose such as would require a philosopher to investigate.

For example, let us suppose a young Miss, unaccustomed to confine her thoughts, for any length of time, to any given subject, writing a composition on *Gratitude*. She has a vague idea that *gratitude* is something praise-worthy, and begins by saying, 'that it is a virtue that all should possess.' When she has proceeded so far, she does not well know what more to say; but the composition must be written; and so she proceeds to say that 'every one ought to be grateful, and when they see people in distress, they ought to relieve their wants:—thus she goes from gratitude to *benevo-*

hence, and, confounding the two virtues, destroys all distinctions of terms and ideas.

It is very important that in your attempts at writing you confine yourselves to subjects with which you are in some degree familiar. No matter how common, or trivial may be the theme; the object is to acquire a habit of expressing your ideas in writing, with clearness and simplicity. For example, give a description of your own dwelling house, state its length, width, and mode of construction, the materials of which it is composed; and a little reflection, with some previous learning, would suggest to you the improvements which have been made in the building of houses and other kinds of architecture. You might describe your own room, with its furniture, &c.; or, looking out upon the prospect before you, delineate in words the various objects before you. Any production of nature or art, might furnish you with ideas. For instance, suppose you should write about an apple—you may think this a very insignificant subject—but nothing that God has made is insignificant; nor is the power of describing the most common object to be despised. Well, now begin to think what you could find to say about an apple: you all know to which of the kingdoms of nature it belongs; you know that it is a fruit, originating from a flower of a certain kind—the kind of flower might be described, the usual height of the tree on which it grows, the climate most favorable to the growth of this tree, the various culinary uses of the apple, the evil purposes to which the ingenuity of man has perverted it, &c. I have yet touched upon few of the subjects which your theme might suggest, and yet much might be said upon each one of the abovementioned heads. A fly, a bee, or a butterfly, might afford subjects for your pen. I do not mean that you are in your descriptions of an apple or an insect, to write as a botanist or geologist would do, but that you express in simple language your own observations upon these, or any other objects. I have said your own *observations*; you will please to notice this, for without observation you cannot write on any subject, except it be merely to repeat like the parrot, what you hear from others. But by attempt-

ing to describe common objects you will see the need of observation and attention with respect to common things, and that learning is not confined to the knowledge which is contained in books.

By using your knowledge, however small the stock at first may be, you will continue to add to your intellectual stores; the idea of wanting to know something that you may communicate in your composition, will induce you to pay attention to objects around you, to hear the remarks of wiser people, and to recollect what you read in books. But do not allow yourselves to borrow from others. On reading a very spirited or profound composition from a young lady of limited talents and opportunities, a teacher immediately believes that it is borrowed, even should it chance that she has not before seen the same thing. This is not only stealing, but defrauding yourselves. If you begin with compositions, above your own capacities, you must continue them, or the deception will at once appear to your companions, as well as teachers. But I should very unwillingly believe that any pupil can be so lost to honorable sentiments as to wish to gain reputation for talents she does not possess, or so unjust to herself as to prevent her own improvement in the attempt to seem to be, what she is not.

You have heard some things that may be said upon an apple. Look around you, and you see innumerable objects in the productions of nature and art; all of these have peculiarities of their own, which may be described even with no other knowledge of them, than you may gain by your sight, hearing, taste, touch and smell,—innumerable comparisons between these objects will also naturally suggest themselves to your minds; as you acquire more knowledge, you will think of many relations existing between them which you now do not observe. The subject of geology, on which you all have the advantage of hearing lectures, will serve to lead even the youngest of you to reflect on the many things which may be said even of stones. You have perhaps thought that all were alike, but you now find that there is diversity of character among rocks, as well as people. The rocks are not morally or intellectually different from each oth-

er, since they are destitute of intelligence, and even of life, which plants possess—but rocks and stones are physically different, that is, their external appearance is various, and their chemical composition different.

When you walk or ride out, you can always meet with something animate or inanimate that may serve for the subject of a composition. When you see a person in affliction, or behold some one debased by intoxication, or taking the name of God in vain, emotions of various kinds will be awakened, and under the influence of these you might be led to write with facility. When you see a good person relieving distress, you will sympathize with the feelings of those who receive this kindness, and thus you may, from your own observation and reflection, comprehend the nature and obligations of gratitude. Yet still you may not be able to investigate this emotion ; for in order to do this, you would need to be acquainted with the operations of the mind, and to explore the recesses of the human heart, and the relations of cause and effect.

Although in some of the foregoing remarks I have more particularly addressed myself to the younger pupils, and those to whom the exercise of writing composition is new, I would say to all, be careful of going out of your own depth ; study to understand the nature of your own minds, and occupy yourselves with subjects which you most readily and fully comprehend—write as if you had something to say, not as if you attempted to say something because you must write. If your minds are properly disciplined to habits of reflection, you must, with all that you are now studying, hearing and seeing, have something to say respecting your own observations, reflections, sentiments and opinions. It is well for advanced pupils, to write frequently on the subjects which they are engaged in studying.

A pupil in astronomy having beheld the heavens, traced the path of the constellations, contemplated the planets and the fixed stars, as they are arranged in their beautiful order, may surely find enough to say of such observations—she might, as genius or inclination prompted, state in precise and scientific language the various celestial phenomena, or with an imagination kindling at

such scenes rise to a style of sublimity. Or if a Christian, and impressed with the thoughts of the Divine Power which created and upholds this wonderful universe, she would naturally be led to pour forth the devout expressions of a pious heart. Mechanical philosophy, optics, botany, chemistry, and all physical subjects, should lead the mind of the student to the observation of nature, and such observations will furnish matter for composition.

History and geography are fruitful in subjects for the exercise of the pen. Rhetoric and criticism are intended chiefly to teach you to arrange your thoughts with clearness and elegance, and to avoid errors which might offend the ear of taste, and rules of composition. Moral philosophy, leading the mind to reflect upon the reciprocal duties of mankind, and their common obligations to their Maker, cannot fail to suggest new trains of thought.

And when the empire of the human mind is first unfolded, as it were, upon a map before you, and the many devious windings of thought traced to their mysterious sources; when you are first led to perceive that the mind possesses the power of looking inwardly upon its own operations, how many new and interesting ideas spring into existence! Copy these in their own native freshness and vividness of coloring, and the transcript cannot fail of being delightful to others.

The first impressions which the various branches of literature and science make upon the mind, have a character of originality and enthusiasm, which cannot afterwards be caught—these evanescent emotions should then be secured by copies made when they are fresh and new.

I have not recommended the attempt to write stories from the imagination; this may be well occasionally, but it has the bad effect of bringing the mind too much under the dominion of fancy. It is better for young ladies to occupy themselves with realities, than to stray too much into the dangerous regions of imagination. Besides, the practice of writing tales has a tendency to form a tinselled kind of style, not to be compared in dignity or propriety with a simple and plain manner of telling truth.

Indeed it is to be hoped that as the various departments of human knowledge become more filled with facts, and these facts are arranged according to the rules of science, ample scope will be found for the exercise of the human faculties;—and although we desire not to see the province of fiction deserted, yet we would see a higher rank awarded to those who search for and discover truth, who assist and perfect nature, than to the fabricators of those gossamer tales which receive all their coloring from the varying and illusive hue of fancy, and which have no higher aim than the amusement of hours, which are already too short and too few for the great objects of human existence.

Poetry is a species of composition which none should attempt except those who are strongly prompted by genius. True poetical talent is rare, and can never be forced into existence : when it is possessed, it should be regarded as a precious gift from the Creator of mind, and enlisted in the service of virtue and piety.

LECTURE XXI.

Logic.—Moral Philosophy.—Intellectual Philosophy.

THE study of Logic should precede that of Intellectual Philosophy. As it is now taught, this science differs much from the logic of Aristotle and the ancient schools ; with them it was a tissue of subtleties and absurdities ; it taught to support both truth and error, furnishing arms alike to both. Amid the multiplicity of rules for the guidance of reason, reason herself seemed wholly to be lost sight of. It was like loading a warrior with armor, until crushed and buried beneath its weight. The ancient prejudices with respect to modes of reasoning, for a long time kept every science in a state of obscurity ; for on the free exercise of the reasoning power in man, depends every degree of improvement in scientific research ; in-

deed there can be no research when reason is fettered. Thus in attempting to foster and improve reason, she became bewildered and exhausted. As an illustration of the absurdities of the mode of reasoning encouraged by the logic of the schools, the following story has been related. 'The son of an unlettered farmer, who had been sent to college for his education, returned to his father's house, puffed up with pride and expecting to astonish and embarrass every one with the wonderful extent of his knowledge, and the sophistry which he had learned. Sitting one day at the breakfast table with his honest parents, the young pedant observing that there were but two eggs. "I can prove to you," says he, "that here are three eggs;—here are *one*, *two*; now, father, will you not allow that *one* and *two* make *three*?" The father could not refute the argument, although it contradicted the evidence of his senses; but, taking one of the eggs himself, and giving the other to his wife, said, "As for you, my son, you may take the third, as a reward for your learning."'

The proper object of logic is to teach the operations of our minds, the method of reasoning and arrangement which is conformable to those laws, and to distinguish truth from error. So far then from being an artificial science, logic ought to be a deduction from observations made upon the nature and operations of the mind. It has been remarked that God did not make man, and leave Aristotle to complete this work, by giving him, as the ancients seemed to believe, the power of reasoning. So blindly was the system of Aristotle followed, that, during the dark ages, in some parts of Europe, it was made a crime punishable with death, for a person to advance any opinion contrary to the doctrines of that philosopher. The art of reasoning, or the true logic, must have been coeval with the dawning of the human understanding. When Adam gave names to the beasts of the field, the fowls of the air, and the fish of the sea, he exercised the power of reasoning with as much propriety as any follower of Aristotle could have done, and probably with far less embarrassment. The latter would, in the first place, have needed to establish syllogistically the fact, that a beast was not a fowl, and that a fowl was not

a fish. He would have thought it necessary to decide whether there was, in reality, any such thing as *classes* of beings, such as we now call dogs, cats, horses, &c.; or whether putting certain beings in a class together, and giving them one common name, such as dog, &c. does not give them that relation to each other, which the mind considers as belonging to individuals of the same class.

The ancient *Realist* would have gravely decided that we must look into our minds for an image which should be the representative of any one genus, and must compare the real animal with the idea; thus the idea or image of a dog in our minds should be the standard to which all real animals which were to be included under the genus *dog*, must be found conformable. Plato and Aristotle were Realists. The *Nominalist* would have said that it was of no consequence what animals were called dogs, what were called cats, &c.—for by giving to any particular number the same general name, we should learn to associate them in our own minds; thus, when the word *dog* was called, we should think of other beings of the same name, although this resemblance in name was in fact the only relationship which the mind acknowledged between them.

It does not appear that Adam was troubled with any of these logical subtleties, with respect to naming the animals. Endowed by his Creator with the power of perceiving resemblances, and probably having received also a knowledge of language, he had only to examine the different created beings, in order to perceive at once certain distinctive characters between the different families, and to give a general name to each family or genus. Whether the names which he gave were entirely arbitrary, or founded on some peculiarity of the animal, we do not know, though the latter appears a probable supposition. For notwithstanding the many transformations which language has undergone we still perceive in many cases a resemblance in the sound of a word, and the animal which it denotes;—thus *snake*, with the hissing sound of its consonants, and its drawling termination seems in some degree to suggest the being to which it is applied;—the name *bird* seems indicative of a quick,

rushing through the air ; *tiger* seems to speak of ferocity, and *lion* of courage. How far our associated ideas may influence us to imagine these resemblances, we cannot well say ; though this circumstance should be taken into consideration. You may be ready to ask, of what use can it be to study logic, if it serves only to perplex and cloud the mind ? We have already informed you that the true purpose of logic is to assist in the development of the reasoning powers, by rules drawn from observation and experience of the nature and operations of those powers. Logic is not to teach you to reason, for nature does this ; but it may assist you by pointing out those methods of study and investigation which people of reflection and observation have found to be most useful to themselves and others. Those who have studied any of the branches of natural science, particularly botany, have already been initiated into the principles of logical division and method. Mathematical demonstration is but the constant practice of true logic, and the latter science will be to those of you who are familiar with such demonstrations, but a review of familiar principles and facts.

Hedge's Logic has been selected as our text book in this study ; it contains the most useful principles of the science, and is little encumbered with the useless rubbish with which antiquity had loaded it. In recitations in this study, it is very difficult to change the language of your author in any great degree ; the precise word used in definitions is here generally the very one which is needed, and the idea might be changed or obscured by attempting to alter the mode of expression. While it shows a dull and mechanical mind for a pupil to be always confined to the mere words of a text book, it is, on the other hand, a foolish affectation and pedantry to avoid with scrupulous care using any of an author's expressions, however fine or forcible they may be. You never need fear being suspected of learning by rote, when this is not the case. There is as much difference in the manner of recitation between one who understands what she says, and one who repeats words from memory merely, as between the chattering of a parrot and the conversation of an intelligent person. The kindling of mind, the beam-

ing forth of intellect is never to be confounded with mechanical effort. Before closing my observations upon the study of logic, I will read you a translation of some remarks from a French work, entitled, '*Conseils D' un Père Sur L' Education Des Filles*.*' 'Teach your daughters to search for principles founded in truth and wisdom ;—teach them to contract the habit of ascertaining as far as possible, whether what they wish to do is conformable to both these ;—teach them to doubt upon all subjects that are not evident, but that when they have well examined the foundation, and are certain of the correctness of the reasoning founded upon a sure basis, they should then know how to stop. Teach them not to wander from this focus of light, but, keeping their eye fixed upon this point, render it a means of discovering any fluctuation in their future opinions or conduct. Correct principles are a port in the tempest ; they are an asylum against the attacks of error ; an inexhaustible fountain from whence the streams which flow are always pure ; an unerring compass to whose guidance we can yield ourselves without fear. We are strong when our conduct has been regulated by the rules of truth and honesty. You are not called upon to prepare yourselves for the pulpit or the bar, though it is well for you to be capable of judging of the merits of those who do appear there ; and although you may not be called to proclaim your own opinions, you may have the satisfaction of enjoying in secret the pleasure of being able to judge and to appreciate the efforts of great minds. The logic which we wish you to possess, is not that which leads to argument, but to the regulation of thought ; that which shall enable you to establish rules for your own conduct. We would wish rather to perfect you in the art of thinking and judging, than in that of speaking ; or, in other words, we would have your knowledge made subservient to useful purposes, not to vanity or pedantry.'

The same writer, remarking on the necessity of order in the train of thought, says, 'I had scribbled long, before I knew how to write : I had a tumultuous abundance of ideas ; they flowed from my pen with great facility : let-

* Counsels of a Father upon the Education of Daughters.

ters cost me no effort ; but when I came to treat upon serious and complicated subjects, I was confused, I felt that my reasoning had not that *tout ensemble*, that connexion which characterizes energy and clearness. My discourses were but a collection of incoherent observations, of isolated reflections, of which I could never endure the second reading. Ah, how many manuscripts have I not destroyed in impatience and discouragement ! At length a ray of light dawned upon my mind—before beginning to develop a subject, I traced my plan ; I did as the architect who determines the proportions of a building before laying a single stone, and from thence, all difficulties in composition disappeared !

‘ From this sincere acknowledgement,’ continues the same author ‘ you may form an idea of the importance of method in the art of reasoning. *Principles* are the *base* and the *fulcrum* of every work, *method* is the *lever*, and *analysis* the *proof*.’ Is not then a rational and just logic a treasure ? Is it not as valuable for woman as for man, since the government of her thoughts, and the regulation of her conduct is of equal importance ?

Moral Philosophy.

Moral Philosophy is addressed both to the heart and understanding. It should commence in the earliest years of childhood, as soon as the little being destined to immortality begins to entertain ideas of right and wrong. There is a period preceding this, when the child is to be governed wholly by a feeling of instinctive obedience. It sees itself in the hands of its parents, knows that they have power over it, and learns to submit its will to theirs. But as soon as the child begins to exercise its reason, as soon as the moral feeling begins to unfold, (we are here assuming the existence of a principle which some moralists or rather *immoralists* deny) then should its moral education commence. It should be taught that the parent does not exact obedience because he has power to do it, but because it is right, because the parent has experience and knows what is best. If one child take from

another its toys, because it has greater physical strength, it should be taught that *power* does not make *right*, and that it is wrong in any case to take what belongs to another, without the owner's consent.

Thus should children, from the dawning of reason, be accustomed to reflect upon the moral relations of actions. The science of Moral Philosophy, as laid down in books is but a collection of those rules and principles which are considered as the proper guides of moral conduct, and which in their simple forms should be thus taught to children. The work of Dr. Paley, although liable to some objections, yet retains its place in most public institutions. It possesses merits of a kind very important in a school book; the style is clear and simple, the method of arrangement calculated to aid the memory, and the reasoning is generally precise and logical. The chapter on the moral sense does not appear to me to state the subject fairly, or to give to the argument that bearing which religion, morality and experience point out.

Consider man as destitute of an original moral feeling (the term *sense* is perhaps an objectionable one) and how can he be considered an accountable being? Is it not this very feeling, implanted by God in the human heart, which renders man a moral agent? Is not this moral feeling the foundation of all our ideas of right and wrong? If right depend on custom, law, the will of a sovereign, or of a majority, where is our standard? Dr. Paley would say, the revealed will of God. But if we have no natural feeling of rectitude, why should we think it right to render obedience to our Creator? This question is thus answered by Paley: 'We believe that God can reward or punish us, that he will do this in proportion to our obedience or disobedience, therefore we will comply with his will for the sake of the reward.'

But how is it with the Creator himself? Are his acts good, because he is powerful; or rather, is there not such a thing as a principle of goodness, of which God is the fountain, and which, when he created man in his own image, was imparted as the vital principle of the human soul? This soul, although corrupted by the fall, still retains a portion of its divine principle, which, even

in the most debased condition of mortals, discovers itself by the remorse and shame which follow vice. With the exception of what I consider Dr. Paley's erroneous ideas respecting the want of an original moral principle, and the necessary consequences from this which appear in his definition of 'virtue, right and wrong,' &c., I regard his Moral Philosophy as a work of great merit and utility. His views of the sabbath are however far from being admitted by all Christians; most of whom believe that the Christian sabbath is a continuation of, and substitution for the Jewish sabbath, and that we are under the same obligation to regard the fourth commandment as the other nine. Dr. Paley considers it expedient and proper to observe the sabbath by attending public worship on that day, and devoting as much time as possible to spiritual exercises; but he does not regard the hallowing of the Lord's day as enforced by a command.

Parkhurst's Moral Philosophy is designed to correct some of the supposed errors of Paley. This is a work of much merit, and may be read with advantage by pupils in this study. In our moral department we shall consider the importance of developing and fortifying the moral emotion, and also its connexion with our duties towards our Maker.

Intellectual Philosophy.

With some remarks on the Philosophy of mind, I shall close my lectures on Intellectual Improvement. This science, although itself the main spring in education, is very properly, as a department of study, the crowning of the whole. It commences with some knowledge of the operations of the mind, and is acquired in the first years of life. The child learns to know the opinions and emotions of those around him, by means of external signs; and he must have reasoned upon associated feelings before he can have known how to move compassion by his cries, or excite laughter by his playful gambols. Every year of life increases his knowledge of mind; he feels himself urged by motives, he perceives a controlling

power in himself, when he chooses to exert it to stop the headlong current of the passions, or to direct them into new and better channels. All observations upon our own characters or those of others belong to mental philosophy; this is the most valuable, or the practical part.

When therefore you commence this study in books, you continually meet with your own familiar thoughts. You had often observed in yourself the power of recalling one thing by the help of others. For instance, when you had entered an apartment for the purpose of finding some article, you perhaps found that you had forgotten what you went for; you were unable by any effort of memory to recal the lost idea, but by returning to the place from whence you set out, were reminded of it by its connexion with other objects. You may not have formed any theory of the principle of association, and are therefore prepared to listen with attention to any explanation of phenomena which are a part of the history of your own thoughts.

Mankind, who are ever prone to excesses, have, from a period in which the study of the human mind was deemed above the comprehension of females, and unsuitable to their condition and character, gone to another extreme in which the science of metaphysics is considered little more than a plaything for children; and young misses who have neither yet learned to think methodically or reason accurately, are heard to talk learnedly of the opinions of Locke, Stewart and Brown.

Some of the elementary principles in the science of mind, as the distinct nature and different destinations of the soul and body, the superior importance of the spiritual part, and the child's obligations to improve his mental faculties, ought early to be pointed out. Such works as the *Child's Book on the Soul*,* which, in language adapted to the capacities of children, leads them to reflect on the nature and operations of the mind, cannot be too highly valued by parents and instructors. These truths form the foundation of all religious knowledge

* By Mr. Gallaudet. This little book ought to be found in all Sunday school libraries.

and belief; a belief in them is anterior even to the idea of a Creator. When the child in answer to the question, 'Who made you?' replies 'God,' he must comprehend the truth, that there is a being whom he calls *himself*, that this being is a something, unlike a stone or a plant, neither of which, he knows, could understand or answer a question.

Although some of the leading distinctions between matter and mind should be taught even to children, I cannot agree with those who recommend the *study of metaphysics* as a preliminary step in education, on the ground that pupils must be made to understand the nature of the *mind*; because that in education, this is both the instrument with which the operation is carried on, and the object which is operated upon.

We might as well insist that a boy was not qualified to be put an apprentice to a carpenter, without a knowledge of the principles on which the lever and other mechanical powers operate; in short, without understanding the theory of mechanics. If a child could not compare, reason or remember until he first understood the powers of his own mind, and the abstract nature of comparison, reasoning, &c., these operations could never be performed; for the very study of them requires their constant exercise, and an exercise rendered skilful by long practice. If the writings of Stewart or Brown are put into the hands of pupils whose minds are not ripe for such investigations, the truths and reasonings cannot be comprehended, and a rooted dislike will, probably, be acquired for the study of mental philosophy. But if the mind has been previously prepared by suitable discipline, enriched by a knowledge of language, of history, and of natural science, so that illustrations drawn from these various sources, may be comprehended and enjoyed, then will the science of mind be drank in with a new and enthusiastic delight. Often have I,* with sympathising enjoyment watched the kin-

* The author, during several years, had charge of the department of intellectual philosophy in the Troy Female Seminary, during which time she had the happiness of instructing many young ladies of distinguished talents and virtues, who now hold a high rank in society, and honorably sustain the various rela-

dling glow lighting up the countenance of such a pupil, on hearing for the first time an explanation of some familiar operation of her own mind, or when tracing the map of the human intellect, she beheld the innumerable little rills which flow into the great ocean of thought, and traced them to their mysterious fountain, mind. The sublime truths of the science enter the soul in all their freshness and beauty; and this era in the history of her own mind is ever remembered with deep and peculiar interest.

I would not be understood as asserting that in the study of mental philosophy, the way is invariably strewn with flowers; or that the pupil is always rewarded by the pleasure of eliciting truth. In no other science is there such a tendency in authors to wander into the mazy regions of hypothesis—fancying that a new ray of light has fallen upon their path, they often begin to see things in a different aspect from their predecessors; and although this new light may be but the coruscation of a brilliant fancy, the hues which it imparts are looked upon as so many revelations made by the torch of reason. Thus have metaphysicians been liable to be misled by false lights, ever since the days of Aristotle, who asserted that the mind resided in the brain, which was a dark cave filled with miniature images, called thoughts, that came forward for the inspection of consciousness, as they were called up by memory, and retreated as they were dismissed by abstraction.

Since the time of Locke, metaphysical writers, following his example, have made the *operations* of the mind or *its faculties*, and not its *nature* or *essence*, the object of their investigations. These operations are known to us but in two ways, *experience* and *observation*, every-

tions of life. Not a few are among that class, who are fulfilling one of the noblest and most important offices of life, that of teaching the young; while others are exemplifying in the domestic circle the beneficial influence of educated women upon human virtue and happiness. When these pages shall meet the affectionate glance of some of those whose memory is thus dearly cherished, the eye will glisten and the cheek glow at the recollection of former school-day scenes, of companions once beloved, and, it may be, of her who watched over their intellectual progress, with maternal pride and anxiety.

thing gained by these sources is an addition to the stock of human knowledge; the great point is to know how to seize upon facts, and embody them in a manner to be intelligible to ourselves and others. Facts, in order to be useful in science, must also be properly arranged; and the difficulty with most minds, is the want of a suitable mode of arrangement.

Logic and criticism are instruments which teach the arts of thinking and of arranging thoughts: metaphysics is the science of principles, it instructs man in the nature and use of his faculties; it discovers to him his weakness, but at the same time shows him his strength; it acquaints him with the extent of his reasoning powers, and that although by these he may know many things, there is a barrier beyond which he cannot pass. In this science we learn to set bounds to the influence of human authority upon the mind, and that no truths, however strongly urged, should be received, but such as have a claim to our belief, founded upon reason. The reason of each individual, must be his own guide; and it therefore becomes a matter of great importance that reason shall, as far as possible be divested of prejudice, and assisted with fixed and unerring principles.

In speaking of the influence of reason in matters of belief, I would here observe, with respect to *Divine revelation*, that after we have, by weighing its evidences, become convinced that it is in fact what it professes to be, the word of God, that it is impossible to resist the united testimony of collateral history, prophecy, the evidence of a multitude of competent witnesses, and the evidence of effects now before our eyes, viz. thousands of worshipping assemblies calling on Jesus of Nazareth, and breaking bread in commemoration of his sufferings—after we have become convinced that any one of these evidences would be sufficient to establish their authenticity, and that this concurring testimony furnishes a mass of evidence which it is impossible for reason to resist or deny, we must then fully and unreservedly receive the Scriptures as the word of God. Are these writings sometimes mysterious and unintelligible to us? So is the moral government of God, so are the dispensations of his provi-

dence ;—are the truths revealed of a nature which human reason cannot fathom ? So are many of the facts in the natural world,—but do we deny the influence of that vital principle which is the spring and source of organic life, because it is invisible to us ? We see its effects and therefore believe in the cause. Shall we deny the operation of the Holy Spirit upon the human heart, because ‘ it is a still, small voice, and we cannot tell whence it cometh, or whither it goeth ? ’ We see the wicked man turning from his evil ways, the proud becoming meek ; the drunkard, temperate, the churl, liberal, he who once scoffed at religion sitting at Jesus’ feet—and shall we deny that these effects are uncaused, because we cannot explain them by deductions from human reason ? Let us exalt human reason to its proper rank, let us walk by its light when we have none clearer ; but let us remember too that He who gave man reason, and who ‘ seeth not as man sees,’ is to be believed and obeyed without question as to the propriety or expediency of his commands.

In all matters of human knowledge and belief, reason must be our guide : when we find a subject to be beyond our capacity we should cease to investigate. Plutarch observed that as geographers, when they have laid down upon their map those countries which are known, place beyond these their *terra incognita* or *unknown lands and seas*, so historians should use the same distinction with respect to the fabulous and uncertain ages of the world. Thus should we in all our researches endeavor to distinguish the boundary which divides the legitimate subjects of human inquiry, from what is beyond the knowledge of man.

No farther than *perception* will carry us, can we go in any human science ; as discoveries are made, perception is aided and rendered more acute ; thus the *telescope* has brought the planetary worlds nearer to us and revealed new facts with respect to them, which are added to the science of astronomy ;—the *microscope* has acquainted man with new wonders in the kingdoms of nature, shewing him, where vision had not before discovered life, that millions of living things exist, which we inhale with the atmosphere, and drink in the purest water ; that

these animalculæ inhabit every leaf, fruit and flower; and some late discoveries would almost prove, that our own material frame is but a mass of living atoms. Wherever *observations* can be made, is a field for human inquiry. But all questions are profitless, which relate to *infinitude*, as *infinite space* and *eternity*; to the *connexion between matter and mind*, and to *their essence*; the *inhabitants of other worlds*, and everything connected with a future state, except as revealed in the word of God. All subjects of this nature, should be considered by metaphysicians as '*unknown lands and unapproachable seas*.'

It is important that you should all understand definitely, the end and aim of the studies you pursue. Mental philosophy would be of little use, had it not its practical applications. The members of this class profess to study the human mind; suppose hereafter, any one of you in promiscuous society should unseasonably introduce your knowledge, talk fluently of the opinions of Brown and Stewart, or even give the result of your own profound reflections, would this show that you practically understood the human mind, or, as it is more commonly expressed, *human nature*? It is to be presumed you would all wish to please, when this can be done without any sacrifice of principle; that you would not willingly disgust others, or acquire the reputation of being pedantic. A knowledge of the operations of the mind, should lead you to consider what kind of manners will produce the effect you desire, should teach that vanity, by leading you to make a foolish display of learning, would defeat its own end, so that instead of admiration, you would excite disgust. Perhaps this caution is unnecessary, as there are now so many educated females, that there is little temptation for any one to be vain of her learning; the effect which Hannah More anticipated as the result of more enlarged systems of education is now realized. A female possessing a cultivated mind, is no longer regarded as a prodigy, and we have far less of *les bas bleus* than formerly. Slipshod feet, dirty caps and gowns, have ceased to be regarded as the characteristics of a literary woman; who is now allowed to dress herself neatly, after the fashion of the day,

and to enjoy the social pleasures of life like others of her species. Indeed, so far is literature, at the present time, from being a reproach to a lady, so far from lowering her in the estimation of others, that when displayed at proper times, and in a proper manner, it adds greatly to her influence and respectability in society.

But there is always a degree of delicacy expected from a lady in the use of her acquirements, which should be understood and regarded. The effect of these acquirements, as I have often remarked, should be exhibited in the general character and deportment, the methodical arrangement of time, richness, ease, and variety of conversation, and in short the power of adapting one's self to the changing circumstances of life, and of fulfilling its many and varied duties. A practical knowledge of the human mind is peculiarly important to our sex ; it is a knowledge which they have ever been quick to seize ; the great volume of life, woman reads with facility ;—mingling in society she soon learns the art of pleasing, adapts herself to its prevailing taste and manners, or rather learns to lead its taste and influence its manners. The French women have, at different times, exercised great power over the minds of kings and statesmen ; they have often, though behind the scenes, been the real actors in the drama of life, while those who fancied themselves the actors were in fact but automaton, moving in a prescribed circle, and accomplishing the designs of those who led them. But how, in many instances, was this influence acquired, and how was it exerted ?—Who are among the celebrated women, from Aspasia of Athens, to Madam Pompadour, of France, that have been distinguished for their power over the other sex ? My pupils, they were those who sacrificed virtue and self respect ; and who sought, in the triumphs which announced their own degradation, to stifle its remembrance.

But these wanderers from the path of true dignity and of virtue, had not the advantages of a consistent and moral education. Aspasia, it is true, lived in the age of Athenian glory, and was deeply imbued with Grecian learning, but she had not the pure light of the gospel ;

and the high rank which she held among the Greek philosophers, notwithstanding the licentiousness of her conduct, show us the actual value of heathen morality.

I remarked that women are quick to learn the operations of the human mind, by observations on society ; but this does not preclude the utility of well-chosen books, and of systematic instruction ; on the contrary, it renders them more important, by giving their knowledge and tact a right direction. Without such aids, females are too apt to exercise their ingenuity in petty attempts to extend their empire over others, from the mere influence of external charms or fascinating manners ; with more elevated views, they learn to value only the influence which is gained by the charms of intellect and the dignity of virtue.

A just and practical knowledge of the human mind is highly important to woman in the several relations of life, domestic and social ; more especially does the mother and the instructor of youth, need to understand the avenues and secret windings of the human heart, to be able to read the thoughts, and to direct them into their proper channel. Mr. Stewart remarks, ' the object of education should be, first, to cultivate the various faculties of our nature ; second, to watch over early impressions and associations, to secure the mind against the influence of error, and to lead its prepossessions on the side of truth.' This science also may have a very important influence upon our own moral and mental improvement ; or, according to Stewart, every person on arriving to years of reflection, perceives in himself defects owing to some mismanagement in education, and knowing the laws of his own mind, he feels the necessity of beginning a course for himself.

This self-education is, after all, the great business of life ; it is in order to enable the young to discipline their own minds, to detect the errors in their own conduct, and the latent evils in their own hearts, that for so many years they are disciplined and taught by others. The sooner this lesson of self-education is learned, the sooner do the young assume the dignity of rational beings, and become fitted to be their own guardians. In

reading the biography of eminent persons, we find that they were always strict in their self-requisitions and self-government. They observed themselves closely, and when they found a bias towards any particular fault or weakness, they directed their efforts towards correcting the one, and strengthening the other.

I would again urge the importance of keeping a diary, in which the moral tenor of your actions and the bent of your minds should be scrupulously noted. This journal should be for your own inspection only; for such is the deceitfulness of the human heart, that it is very apt to suggest a too flattering picture of itself, where it is made with the design of being seen by any but the original.

‘Man, know thyself,’ is a precept as important as it is difficult in practice. To assist us in this duty, no science is more highly beneficial than that which has the human mind for its object, and yet unless we add to our philosophy the wisdom of true piety, we shall never fully comprehend the extent of human depravity, the true mode of purifying the heart, and rendering it meet for an offering to its Creator.

LECTURE XXII.

Accomplishments.—Music—Dancing—Drawing.

WE have now completed our view of the various branches of literary and scientific education, which constitute a course of instruction in the institution of which you are members. We have considered them all under the general head of *Intellectual Improvement*.

It has been my wish to give sketches of these subjects, which, though neither perfect in outline, or minute in particulars, might, as graphic delineations, serve to fix their leading features upon the tablets of the mind.

The chief object in the attainment of what are called *accomplishments*, ought to be to soften and refine the manners, and add to the innocent and elegant enjoyments of human life. I shall not at present dwell upon the subject of female manners and deportment, except as this may be connected with that of accomplishments.

In some of these, as music and drawing, the physical and intellectual powers, and the emotions are all exercised. Dancing is to be considered chiefly in reference to its effects on the motions and carriage of the body, although as a pleasant and exhilarating exercise, it may be made conducive to the promotion of cheerfulness and good humor.

Female manners cannot be taught with didactic precision, under any given number of rules. There is a certain nameless grace in fine manners, which it is impossible to describe, and which cannot be traced to any one source. They are the result of education, intercourse with refined society, and that general benevolence which wishes to please, not from the impulse of vanity, but because it finds its own happiness in making that of others. The manners acquired at boarding schools are often, and not without reason, made the subject of severe remark. One writer says, 'Boarding schools give us artificial creatures, made up of artificial looks and smiles; their airs, gestures and articulation are all a compound of affectation. Such schools give *forwardness* to fruits, but deprive them of their natural healthiness and flavor, and the *fine ladies* they send into the world feel themselves ridiculously exalted above all sensible conversation, or all attempts to be useful.'

Although the author just quoted appears to have indulged in too indiscriminate a condemnation of all boarding schools, we cannot but admit that he has drawn a correct likeness of many of the *finished* young ladies of the present day. To a sensible and elevated mind, nothing can appear more ridiculous and contemptible than the airs which are sometimes assumed by young ladies on leaving school, and making their *entrée* into the world of fashion. The cause of this exhibition of folly and affectation may often be traced

to early associations, acquired under the paternal roof, and confirmed by a defective mode of education.

The influence of maternal character is strikingly manifested in the associations of the child. A young girl who observes that show and fashion are the chief concern of her mother's life, very naturally acquires the habit of regarding these things as of the highest importance. She learns that to play and sing well, to possess a fashionable air and manner are to be her passports into the world of fashion, which she believes is the true paradise of life. Her young bosom heaves with tumultuous agitation at the thought of that period when she shall be *brought out* or *become a young lady*, be entitled to coquette, to prattle nonsense, and play off the airs which she has learned to consider the test of an *elite* of fashion ;—with such prepossessions she is sent abroad to a boarding school, and with the avowed object, on the part of the parents, that she may become *finished*, or may, in a degree, perfect herself, in certain elegant accomplishments. The inquiry on the part of such parents with respect to the character of a school, is not, what course of mental discipline is there pursued, what is the tone of moral instruction, or the standard of intellectual attainments ; but what attention is paid to accomplishments, and what are the advantages for learning music, dancing, &c.

What must be expected from the daughters of such parents, after the completion of an education in a school conformable to their own false ideas of merit ? If young ladies enter life fitted only for its gay scenes, what is to be their future destiny, even in this world ? So far are festive scenes from making up the whole of life, that even in the most prosperous condition of human existence, there is more of sorrow than joy, more of mourning than mirth. It has been observed by the good Hannah More, that from the course pursued by many with respect to the education of their daughters, one might, reasoning *a priori*, be led to infer that the life of women consisted of one universal holiday, and that the only contest was, who should be best enabled to excel in the sports and games that were to be celebrated in it.

Now it is this very idea of the great importance of accomplishments which causes so much vanity and affectation among females. Did they, for instance, regard music merely as an agreeable and refined amusement, which would enable them to add something to the enjoyments of their friends, as well as afford pleasure to themselves, we should not see so much parade and fluttering when a young lady is requested to sing or play in company. The very idea that her performance is a matter of great moment, the expectation of the admiration she shall receive, or the fear of mortification, all serve to render her manner constrained and unnatural; add to this, a habit of affectation already acquired, and we have the picture of many a young lady exhibiting herself to the pain and mortification of all sensible and truly elevated people.

Let music, and other elegant accomplishments, take their proper rank; they are pleasant, as interludes in the great drama of life's duties. If an actor in an inferior part should fancy himself the hero, and snuff the candles or perform any other trifling service as though it were an affair of the first importance, the beholders would consider it ludicrous; so to a reflecting mind appears the manner of those who seem to think the singing of a song, or playing an air on the harp or piano an occasion of the deepest interest. A long prelude of hesitation, apologies and denials, must prepare the minds of the company for the great event; and in many cases the result of this preparation, is the interruption of all sensible conversation for a very indifferent or affected performance.

A young lady's appearance in conversation, is far more important, as developing her intellectual attainments, than any musical performance can be, and yet few would refuse to enter into conversation, through consternation at the idea that they might not be admired if they did speak. We do not expect the dumb to speak, neither can a lady ignorant of music perform for the gratification of her friends; but one who possesses this accomplishment, should no more refuse to exercise it at proper times, than another who can speak should refuse to

enter into conversation. The great point is to have just and enlarged ideas of the real importance of actions and things, that we may not attach undue importance to trifles. If a young lady who is known to have some skill in music, after modestly stating her own deficiencies, performs but indifferently, she has at least shown an amiable, obliging disposition in complying with the wishes of others, and in many cases such instances have made lasting impressions favorable to the character of a person. If another young lady shows herself off with an air of vanity and self-satisfaction, however fine or scientific her performance, she has left no pleasant remembrances of herself in the minds of the beholders. And even without any disqualifying circumstances, of what use are the first musical talents as respects the great business of life, or as the foundation of a character? The stage probably affords finer specimens of musical talent than any private circles, and yet how wretched and depraved have been some of the most distinguished of its votaries! at the best, how low is their station in society, and how little do they contribute to the real well-being of mankind!

A French lady of distinguished talents, elegant manners, and the instructor of queens and princesses,* in remarking upon female character and the influence of mothers upon the associated feelings and the principles of their daughters, says, 'Honored be the mother, who, in bringing up her daughter, is not actuated by the sole desire of rendering her *fascinating*; who secures to her a durable good in the cultivation of her judgment, and in the enlightening of her mind; who accustoms her to prefer duty to pleasure, knowledge to amusement; who teaches her to be learned without pedantry, and graceful without affectation. Then will this daughter be wise without vanity, happy without witnesses, and contented without admirers.'

As an elegant accomplishment, and a resource against adversity, music may well be considered a desirable branch of education, if circumstances permit its attain-

* Madame Campan.

ment. This science may also be cultivated without any detriment to mental improvement, since, during the time devoted to it, the mind is agreeably relaxed, and the physical powers are called into action. One or two hours each day, devoted to practice on any instrument of music, besides the usual time spent in receiving lessons, will, if faithfully improved, soon produce a manifest improvement; if this course is pursued with persevering industry, for some length of time, a young lady may perform upon the piano or harp with skill and execution.

But I cannot avoid considering that parent or instructor as deeply guilty, who urges a child to spend the greater part of a day in thrumming upon an instrument, leaving the mind to grow rank with the weeds which will spring up where the intellectual powers are not cultivated, and suffering an immortal being to grow up to maturity without that mental and moral culture, which are so important both for this world and for eternity. What can we think of that father, who compelled a daughter for several years to practise twelve hours a day upon the piano, and occasionally stood over her with a whip, to urge her efforts. The young lady indeed became a great proficient in music; she appeared with eclat at public places, and was the seven days wonder of the fashionable world. But she failed to make that splendid connexion in life for which it was supposed the father designed for her; for, though flattered and caressed by many, it did not appear that any gentleman of fortune thought that the highest perfection in music, was sufficient in a wife to atone for the want of more common though more necessary qualifications.*

You will not understand me as depreciating music, or encouraging its neglect. Those who possess a native talent for this delightful art, and whose circumstances render its cultivation proper, should, as I before remarked, improve the opportunity of acquiring it. When commenced, music should be assiduously pursued; it requires much patience and practice, to become even a tolerable

* The case here mentioned is one of real life, and which occurred in our own country.

proficient. A pupil should not only endeavor to acquire skill and taste in execution, but to understand the science and to comprehend the principles on which it is founded. It is important that those who are to learn music should commence the study while young; at this time the fingers are pliant, and can easily accommodate themselves to exercises which are found very difficult by older persons. At a period, too, when the faculties of the understanding are but partially developed, there is not that necessity for the full appropriation of time in study, which is afterwards required in the pursuit of the different branches of education.

Madame Campan well remarks, that ‘the many hours which a young girl devotes to the instrument would be much regretted, if they did not procure her a genuine talent for life. We hear it often remarked, that a young person as soon as she is married, shuts her piano, which becomes merely a useless piece of furniture: this is true, when it recalls only the melancholy recollection of a culture without fruit. If by means of repeated lessons, chidings and tears, she is able to play some sonatas which have never contributed to her pleasure, nor that of others, is it not very natural that she should free herself from this restraint, as soon as she can follow her own inclination?’ But if a lady can read music, and has entered with any degree of enthusiasm into the delights which it affords, she will never be likely wholly to abandon an exercise in which all the emotions find an answering expression.

In joy and sorrow, hope and despondency, the swelling heart may find vent in sprightly or melancholy strains of music. I recollect an elderly and very amiable foreigner, whose *cara sposa* was not of the sweetest temper imaginable, who always resorted to the piano, after a storm of female vengeance had burst upon his head. This instrument seemed as a faithful friend which gave out no other tones but such as were respondent to his own feelings. And since females, though sometimes the aggressors, are more frequently the aggrieved party in domestic discords, music might be improved by them to a similar purpose. Indeed, music

if cultivated and practised by a married lady with the view to her amusement and improvement, must have a tendency, not only to console her in trouble, but to soften and elevate the tone of her mind, and to smooth the asperities of her own temper.

Vocal music is far from being the artificial thing which amateurs of the present day would represent it. The birds have no Italian masters, and yet even the trills of the most scientific performers are far inferior to some of theirs. It has been proposed to introduce vocal music into common schools, as one of the ordinary exercises. A gentleman who has travelled much in Europe,* states that in Germany and Switzerland, music both in theory and practice is regularly taught as an important branch in the national system of education. He says that a distinguished professor of the island of Sicily on hearing of the unhappy influence of study upon the health of our literary men, asked, 'What are the amusements of your literary men?' When answered *none*,—the professor said 'No wonder they are sick, and die of study,'—observing that he spent a stated portion of the day in recreations, of which instrumental and vocal music were an essential part, and that he thought he could not live without the relief which they gave his mind.

While speaking on the subject of vocal music, I cannot but deprecate the improper character of most of the popular songs of the day. Young ladies are often heard to express in singing, sentiments that they would blush to utter in conversation; or, if there is nothing absolutely wrong in the thought, the words set to fashionable music are usually without sentiment or moral. The beautiful and chaste songs of Mrs. Hemans are a noble exception; everything that comes from her pen is pure, and bears the image and superscription of an elevated and chastened mind. The plaintive and thrilling air of her 'Bring Flowers,' the spirit stirring 'Pilgrim Fathers,' and the wail of the 'Captive Knight,' are only equalled by some of the noble efforts of Heber.

* Rev. W. C. Woodbridge.

Has America no Hemans, who will awaken a sleeping lyre in behalf of her young sisters, to give them songs, which, instead of soiling the purity of their yet unpolluted hearts, may enlist their associations and affections in the cause of virtue? Have we no Heber, whose lips, touched with hallowed fire, may warble forth strains which shall waft the spirit above the mist and darkness of earth-born passions, and teach it to soar in the regions of a pure love and holy devotion? Alas, *fashion's seal* must first be set upon the noblest and purest efforts of human genius, before it can gain access to the temples where *she* is worshipped;—and we are led to wonder that she has even deigned to accept offerings as pure and holy as those which have emanated from the spirits of Mrs. Hemans and Bishop Heber.

To her whose heart beats high with the hope of admiration in the circles of fashion, and who has no object beyond that of receiving this admiration, to the gay and thoughtless girl who counts each day a weariness till she shall be released from intellectual labor, from regularity in duty and in conduct, who feels that she is about to realize in coming scenes of amusement, those visions of earthly bliss which had been impressed upon her almost infant mind,—to such an one it would be useless to say, Let not fashion, let not the popular taste seduce you from the straight and narrow path of female delicacy and prosperity. Alas! such warnings are vain, such admonitions are powerless, where the heart's affections are already, in imagination, poured out at the shrine of fashion, that destroyer of woman's purity of heart, and simplicity of taste and of character.

But, suffer me to hope, that few of you will thus leave these retreats, where female virtues have been assiduously cultivated, where female influence has been so often explained, where female duties have been enforced, and the female mind has risen to new light and life!—Suffer me to hope, that not one of you after all this, will leave this sanctuary to go forth into the world, thoughtless as the giddy insect, which rushes into the consuming flame. It is your duty and your right, to take upon the stage of life a standing, dignified as your rank, fortune, talents

and accomplishments, entitle you to, but forbear to lend your countenance to folly or vice, however elegant or fascinating they may appear.

My remarks on the study of music have been somewhat desultory; and suggestions connected with the subject have drawn me aside from some remarks which I would make before leaving this topic.

Before commencing this branch of education, reflect whether you have a natural taste for it, and whether this accomplishment is correspondent to your means and condition. If in your own judgment and that of your friends all these things are considered favorable, commence music with the resolution of becoming a proficient in it. Consider it as a means of improving your taste, and giving refinement and delicacy to your emotions. As a science it has its intellectual department; it assists in the perfection of the physical organs, particularly in educating the ear to a nice discrimination of sounds, and may do much towards forming a correct habit of reading.

It will be a resource in adversity, will enable you to enliven domestic scenes; and should you be mothers, it will render you capable of instructing your children, or at least of knowing when they are well instructed. The highest and noblest object of music is to employ it in the service and to the praise of our Maker. The blessed in heaven are represented as singing to golden harps the glories of redeeming love. It is melancholy to behold a person highly gifted with musical talents, who has never learned to employ them in praise to Him from whom man receives all his faculties.

I am sensible that as yet I have scarcely touched upon the main spring, which, among many, causes a devoted attention to music; I allude to the anticipated power of dazzling by the display of an elegant accomplishment, the hope of being the centre of a fashionable circle;—but on this point I shall not now dwell. It is too painful to anticipate the evils which result from these hopes and expectations, so often the ruin of females, or of all that is truly estimable in the female character.

Permit me to hope that those of you whose intellectual powers are strengthened by discipline, whose minds are stored with a rich variety of knowledge and whose morals are elevated by reflection and study, and especially those who are influenced by religious consideration, may be able to repress an inordinate love of admiration, and to enjoy the possession of elegant accomplishments, unaccompanied by that restless vanity which finds happiness only in display.

Dancing.

Madame Campan, whose judicious opinions I have pleasure in repeating, observes: 'Accomplishments should not form the basis of the education of girls, but the first lessons in dancing and the piano should be given at about the age of seven years. Youthful limbs can place themselves more easily according to rules, which add to the graceful embellishments, and render them so natural that the fruit of lessons can be no longer distinguished; it is also very certain that the physical developement and health of children gain much, where they contract in good time the habit of holding themselves up, and walking gracefully.' I am aware that dancing in many cases receives too great a share of attention, and what is still worse that it sometimes creates and fosters vanity and a love of admiration in the youthful heart; but this is not the only thing innocent in itself, which may be abused and perverted. Language is often made an instrument of evil; religion itself may be used as a cloak for hypocrisy, but we would not that either language or religion should be condemned because they may be thus perverted.

As a healthful exercise, dancing is recommended by most physicians. Dr. Warren, in his lecture delivered at Boston, in 1830, before the American Institute of Instruction, remarks that 'next to walking in the open air, the best exercise for a young female is dancing. This brings into action a large part of the muscles of the body and lower limbs, and gives them grace and power.'

To those who are engaged in study during a large part of the day, some exercise of this nature seems absolutely necessary, especially in winter, when the weather confines females within doors.

It is for this reason, as well as for the sake of improving the external deportment and carriage of our pupils, that dancing is here taught and practised. But you are well aware that there is a great difference between young ladies receiving lessons at the seminary and practising wholly by themselves, or going to a public hall where young persons of both sexes mingle promiscuously, and attending at *publics*, or quarterly exhibitions. There are certainly evils attendant on such a course, which more than balance all the advantages to be derived from learning to dance—girls and boys associating before they consider themselves as ladies and gentlemen, either acquire a familiarity of address which in after life will be improper and disgusting, or begin to practise the arts of coquetry, which, ridiculous as they are at any period, appear still more so where we look for the honest simplicity of childhood.

It is this improper manner of practising dancing, and the subsequent dissipation of after years, which has prejudiced so many good people against an exercise which nature prompts, and which the Author of nature has never prohibited. Even the battle-horse is moved by the sound of martial music, and treads proudly to its measures. And who that sees a child, or a young female moving in harmony with sprightly music, can look moodily upon the sight as though it were a sin against Him who adapts the ear to the nice perception of sound, makes the heart to answer in correspondent emotions, and gives to the muscular frame the power to express by motion, the character of these sounds? That in itself dancing is not offensive in the sight of Heaven, we may gather from the tenor of the scriptures. Among the pious of old we read of dancing as an expression of cheerfulness. David, in the overflowing joy of his heart, danced before the ark of God. Jephtha's daughter, a maiden of purity and innocence, went out with music and dancing to meet her father returning from battle.

Our Saviour himself in the parable of the prodigal son, in which the father is considered an allegorical representative of Him to whom we have every day need to say, 'Father I have sinned against thee'—our Saviour represents this father as having in his house music and dancing on the occasion of the penitent's return.

While I would rescue this exercise from the reproach which I think has been improperly attached to it, I would condemn in the most decided manner those evils which have been suffered to connect themselves with it. Some of them I have already mentioned in remarking upon promiscuous dancing-schools and public balls. I would observe that another evil connected with these, is the fondness for dress and display which they usually produce. Mothers, when their little darlings are old enough to go to a dancing school, are too apt to think they must appear very *fine*; their own boxes of jewelry are searched for ornaments, their watches divested of chains for the pretty necks of these miniature belles; or, if circumstances permit, new ornaments are purchased; dresses are made which vie with the gossamer in lightness of texture, and this mimic representation of a French doll is sent forth thus bedizened to attract the envy of her companions, and to imbibe the moral poison which will hereafter appear in her devotion to dress and her thirst for admiration. I could point out instances of females, whom nature has highly favored with beauty of person, talents, and most amiable dispositions; but yet the whole beautiful fabric has been deformed by this one taint, which, taking deep hold in childhood, no after exertions could remove;—like the blood of the murdered which superstition believes leaves an indelible mark on the murderer's hand, vanity, when it has once deeply stained a female bosom, can never be washed away. But I am wrong—there is a fount in which sins may be cleansed, and there are some penitent Marys who,

'O'er the faults of former years
Have wept, and are forgiven.'

Drawing.

Drawing is the art of representing by means of lines upon a flat surface, the forms of objects and their relative situation. This accomplishment, so conducive to refinement of mind, is at once useful and ornamental. Every gradation in the art is pleasing, from the sketch of a simple flower to the grandest historical design.

All the arts which tend to the embellishment or comfort of civilized life depend essentially on drawing.

Painting has for its basis the art of drawing; how much then do they err who attempt to teach it to those who have not attended to the principles on which drawing depends. A few years since, it was not uncommon for pupils in female academies and boarding schools to use colors as soon as they began to draw; or at the most a few sketches of flowers or landscapes, made without rules or principles were required.

In no art or science perhaps is genius more necessary than in drawing. But genius to be successful must be assisted by rules of art, and especially by a close observation of nature, a resemblance to which is the foundation of all our admiration for the fine arts.

Some knowledge of the principles of Geometry is very important for the pupil in drawing. The custom of drawing geometrical figures, and maps in the geography and history classes, besides its importance in these studies, is a useful exercise in drawing, as much as if this were the ultimate object in view.

Drawing is an art in the attainment of which great industry and perseverance are necessary. The pupil should commence with perpendicular and horizontal lines (which are by no means as easily made as some may imagine) and proceed to curves, circles, ovals, cones, cylinders and squares.

After practising until these various figures may be easily made; parts of buildings, as arches, columns, doors and windows may be next attempted. Flowers and fruit are drawn much more easily than figures which require accuracy in horizontal and perpendicular lines. Trees

require much study ; the various forms of foliage, the direction of the branches as pendant, erect or horizontal, the nature of the bark and the characters of the trunk, should all be studied from nature. Good copies are of great use, but every pupil of taste and genius will be led to the observation of natural objects.

It is indeed one of the great recommendations of the study of drawing that it gives a new interest to the visible creation, and awakens in the mind new sources of enjoyment. The simple wild flower, the decayed tree, the ruined building and the wild cascade, all present to the artist objects which please in contemplation, and which he delights to copy. The various forms and tints which are reflected to the eye from clouds, from the sky at sun-rise, or the pensive evening twilight, all are poetry and beauty to the soul of the painter. He regards with attention and admiration the pure blue sky of the zenith, as it contrasts with the darker hue of the horizon, variously affected by the situation of the sun and the reflection of its rays upon the vapors which float near the surface of the earth, appearing red, violet or rose colored.

The imitator of nature beholding the distant mountains in their faint, blue outlines, might in the words of a kindred spirit, exclaim,

‘ Why do those cliffs of shadowy tint appear
More sweet than all the landscape smiling near?
’Tis *distance* lends enchantment to the view,
And robes the mountain in its azure hue.’

And, if a moralist, he might add,

‘ Thus with delight we linger to survey
The promis’d joys of life’s unmeasured way ;
Thus from afar, each dim discovered scene
More pleasing seems than all the past hath been.’

Objects which to others may be disagreeable, give rise to the finest productions of the artist. Wherever the marks of time appear, he seems delighted to seize upon and immortalize the ruins ;—the decayed cottage with its sides and roof covered with moss, the dilapidated church, or castle, afford more picturesque objects for the pencil than the neat farm house, or the modern edifice.

Thus a rustic in ragged garments, mounted upon an old and lean horse, is more picturesque and affords opportunity for a more graphic delineation, than a well-dressed man upon a sleek looking poney.

In drawing from copies, a rule and compass should not be used, except in measuring buildings.

To the beginner it is useful to draw lines across the copy and the paper on which the delineation is to be made, marking them both into an equal number of squares ; thus the objects in the squares on the copy may be easily and correctly transferred. Threads, instead of lines, stretched across are equally useful to the learner and less injurious to the pictures.

In drawing a landscape from nature it is well to select a gentle elevation with a large circumference of horizon. The scene to be copied may then, in imagination, be divided by certain perpendicular lines, these by being marked on the paper and intersected by what is termed the horizontal line, have the same effect in measuring distances as the squares in the method just described.

There can be but one point of sight in drawing a landscape, or but one spot at which the eye of the spectator is supposed to be fixed, from which, as from a point, all the objects must be comprehended.

Sixty degrees of the horizon is considered as being the angle of vision ; that is, considering the eye as the centre of a circle and the horizon its circumference. Now you will perceive that the objects nearest the eye or on the foreground of the picture must occupy much greater space upon the picture than distant objects ; of course, we can represent a much greater number of objects in the distance.

In copying a flower from nature, it is proper to begin with the centre and proceed outwardly with the leaves, placing them one above another in a manner corresponding to their natural arrangement.

The drawing of the human figure is the most difficult as well as the highest department of the art. It constitutes, indeed, a distinct branch, and it is absurd for one who has painted a few landscapes or flowers to suppose herself capable of execution in this with accuracy.

Few young ladies attend to drawing sufficiently to become proficient in the delineation of the human figure. When many years of undivided and close attention are required to form a tolerable artist, neither school girls or their teachers should be censured, if, after a few months practice, the former cannot rival Raphael or West.

A knowledge of Geology is of use to the landscape painter, as it teaches the distinctive characters of rocks, and their modes of stratification, the characters of mountains, and of the different formations of the earth.

An acquaintance with Botany is also useful in flower-painting; without this the pink might be represented with six stamens, and the lily with ten. A knowledge of flower painting is also very important to botanists, by enabling them to make sketches of the various vegetable productions.

Among the different modes of painting is *Oil painting*, the colors of which are the most durable, and in which the shades may be made to blend in the most perfect manner.

Mosaic painting consists of an imitation of objects by means of a union of very small pieces of marble of various colors fixed in stucco, or mortar. If this is well executed, it will remain to remote ages without decay. Fine specimens of these composed of copies of the great Italian masters, are to be seen in St. Peter's Church at Rome.

Fresco painting is performed with colors diluted in water, and laid on a wall newly plastered, with which they incorporate; they are almost as durable as the mortar itself.

Painting in water colors is often called *limning*; it is performed with colors mixed with water. This is the kind of painting most convenient for ladies; it can be performed with neatness and without the disagreeable smell which attends on oil painting; the latter however possesses many advantages over the former, and should be studied by all who aspire after great eminence in the art.

Pencil and India ink shading appear neat and tasteful, and considerable perfection may be attained in them with comparatively little study.

Velvet, Chinese painting, &c. are methods by which

handsome pictures are made, but they are almost wholly mechanical operations, and neither afford evidence of genius, or have a tendency to cultivate the mental faculties.

Drawing is considered the elder sister of painting, as it is the younger of geometry. The attempt to imitate by lines upon a flat surface the forms which we see in nature, is the commencement of the art of drawing.

The Greeks had a tradition that drawing and sculpture took their rise by means of a young girl's drawing a shadow of her lover upon the wall, which her father cut out and modeled in clay. In the early attempts at drawing, there may be distinguished several periods; 1. Objects were delineated by rude shapeless lines; for instance, an oval represented a head; 2. These drawings were colored over with black, or some other color, and the eyes, eyebrows, nose, mouth, and hair, were marked with white upon the dark surface; 3. An attempt was made to give animation to pictures by representing the different color of the drapery. It was in this way, according to Homer, that Helen and Andromache embroidered tapestry; 4. Prominence and relief to objects was commenced by drawing lines in the back ground. These attempts soon showed what the power of the art might accomplish, and we find the Greeks, in the days of their glory, pre-eminent for their perfection in drawing and sculpture. The teacher of the great Apelles required his pupils to remain with him ten years.

The Egyptians, as appears by the figures represented on walls of ancient temples and catacombs, appear to have made some progress in the art of drawing. These pictures are supposed to be hieroglyphical representations of historical events, or mythological fictions.

The first of the Greeks who contended for the prize of painting at the public games at Corinth and Delphi, was Penæus, the cousin and pupil of Phidias, a celebrated artist.

Zeuxis, and his rival Parrhasius, about 378 years before Christ, carried the art to great perfection. The latter is said to have excelled in throwing into his

paintings a striking expression of grace and dignity. He became so arrogant on account of his successes that he clothed himself in purple, wore a gold crown upon his head, and pretended to be a descendant of Apollo.

Apelles connected with a correct delineation of nature, a highly finished and flattering coloring, and was considered as a master of portrait painting. But the fine arts, poetry and eloquence, sunk with the liberty of Greece.

The Romans long remained indifferent to the art of design, and in the height of their glory never attained to Grecian perfection in any of the fine arts. After the introduction of Christianity the art of painting seemed to revive, and most of its finest productions for ages were connected with the Christian faith. In the fourth century the custom of placing the pictures of saints in churches extensively prevailed both in the Eastern and Western Empires. Artists, stimulated both by genius and religious zeal, strove to excel each other in the execution of their works.

In the 13th century, the art received in Italy a new impulse from the labors of Michael Angelo, Corregio, Raphael, Titian, Leonardi de Vinci, and several others almost equally distinguished.

The various artists of Europe are considered as constituting *schools*, each of which has its peculiar manner or style of painting.

The *Florence School* is distinguished for greatness, severity and majesty; at the head of this was Michael Angelo, who delighted in being great and terrible, but sought little aid from grace or beauty.

His knowledge of anatomy gave him great power in representations of the joints and muscles; for which reason he often made choice of emaciated figures, the monk or hermit, attenuated with the severity of his vigils and abstinence, but with a countenance beaming high and sublime thoughts, were fit subjects for his pencil.

The *Roman School* had at its head, Raphael Sanzio—he was distinguished for his accuracy in copying nature, rather than brilliancy of imagination. It was observed by a German artist, that ‘if the Greeks sailed with maj-

esty between heaven and earth, Raphael walked with propriety on the earth.'

In the *Venetian School*, Titian (whose real name was Taziano Vecelli) was conspicuous. This school was distinguished for skill in the use of colors, for powerful effects, by contrasts of lights and shades. It was confined principally to oil paintings, while the Florence and Roman schools painted in water colors, or fresco.

The *Lombard School* was distinguished for grace and softness; Antonio Allegri, usually called Corregio, was the founder and chief of this school.

The second *Lombard School* was distinguished for the brothers called the Caracci, each of whom excelled in particular departments of the art.

The *French School* presents so many varieties of manner, that it is difficult to ascribe to it any prevailing characteristic. Poussin, who is called the Raphael of France, had no pupils, and formed no school. His works are distinguished by an antique appearance. Le Brun was a painter of invention and great power of execution. He studied the expression of the passions, and acquired much skill in their delineation.

The *German School*, like the French, consisted rather of isolated individual artists, than an assemblage whose works were characterized by uniformity of manner. Albert Durer was an engraver and painter. His works, though numerous, were correct and finished, but not remarkable for taste, beauty, or sublimity. Holbein excelled in historical and portrait painting. One of his pictures, the 'Dance of Death,' is remarkable for a mixture of the grotesque and horrible.

The *Flemish School* is said to have discovered, or, at least, first extensively practised oil painting. Peter Paul Rubens was at the head of this school. He excelled equally in fruits and flowers, historical, portrait, and landscape painting. He seemed to possess the power of embodying, with perfect ease, the sprightly and beautiful conceptions of a mind rich in fancy and glowing with the inspiration of genius.

The *Dutch School* is peculiar for the subjects which occupied the attention of its artists. The ale-house, the

tavern, the mechanic's shop, seemed to afford the scenes which most delighted them, and called forth the efforts of their genius. This school is distinguished for correctness of perspective, fine representations of clouds, sea scenes, animals, fruits, flowers and insects, and excellence in everything which requires faithful imitation, or brilliant coloring and niceness of execution.

Rembrant Vanryn, the son of a miller of Leyden, is celebrated for his grotesque figures and low scenes, upon which he devoted much study and talents, perhaps equal to any of the masters of antiquity.

The *English School* numbers many respectable artists, among whom are Vandyke, a pupil of Rubens. Lily, a portrait painter, is chiefly celebrated for his pictures of females.

It has been objected to him, that his faces had too much sameness of expression, a certain languishing air and softness, and sweetness, the partly closed eye, which seemed to reveal tenderness and sensibility. But this might have been more the fault of the females, than of the painter, who probably wished to please his employers.

Hogarth, the son-in-law of a painter, is exceeded by no artist, in works of humor.

Sir Joshua Reynolds, is considered the founder of the *English School* of painting; he united science to art, and did much towards reducing to system, scattered facts and principles.

No artist in this school is more celebrated than our own countryman, Benjamin West, who was, for many years previous to his recent death, President of the Royal Academy of Design in London, and acknowledged as the first painter of his age.

American artists have in general found in their own country less encouragement than abroad; for this reason, and for the purpose of studying the ancient works of art with which Europe is enriched, many spend their days abroad, and add that lustre to the arts in foreign countries which is vainly regretted in their own.

The names of Trumbull, Inman, and many others stand high in the list of American painters.

There are three distinct provinces in painting, such as have for their subjects man, the lower animals, and inanimate nature. The first is termed *historical painting*, and includes not only subjects taken from history, but allegorical representations and scenes from real life. This is the highest department of the art, requiring in the artist a lively conception of human passions and their various external appearances, a knowledge of anatomy, comprehending not only the joints but the muscles of the body, and the almost infinite variety of expression which may be produced by their changes. Thus by the contraction of two small muscles in the upper lip arises a look of contempt, while nearer the cheeks the expansion of two other small muscles and the contraction of the corresponding ones gives an expression of complacency and condescension. The historical painter must not only understand and be able to express the most minute circumstances relative to the effect of the different passions upon the countenance, but is required to delineate with accuracy the most insignificant member of the body. A bad hand or a disproportioned finger is sufficient to mar the beauty of the finest picture. Especially must the painter be able to group his figures in a picturesque manner, so that the *tout ensemble* shall make a striking and agreeable impression. In order to produce this effect, he must first have the conception in his own mind. Chateaubriand says, 'the *universe* is the *imagination of God* rendered *sensible*.' The painter, though not possessing power to bring into real existence the images in his mind, by means of the canvass can transfer them to the minds of others. Hogarth was peculiar for the power of retaining in his mind's eye the various living scenes which passed before him, preferring to copy from these pictures, and taxing his memory with retaining them, rather than the dry rules of his art.

The *painting of animals*, although considered distinct from *landscape painting*, is yet intimately connected with it, as landscapes are, in general, rendered more interesting by the introduction of living beings, as cattle grazing, or flocks reposing. Landscape painting admits of human figures, as seen at a distance; but the character

of such paintings is lost by giving to figures too important a place. Rocks, ground, foliage, buildings, sky, and water allow to the landscape painter a wide scope in coloring. Every true painter will possess his own style of coloring, as much as every author of genius his own style of writing ; and it is as impossible for such a painter to convey his art to another, as for the writer to transfer his own power of expression.

Genius has never failed to command respect, even among the rudest people and the most uncultivated state of society. Henry VIII. of England, a vain and licentious king, was proud of patronizing Hans Holbein, a distinguished painter of the German school. The artist was one day deeply engaged in finishing a work for the king, and being interrupted by the entrance of a great lord of the court, very unceremoniously turned him out of his room. The courtier, on making complaint to his majesty of the impudence of the painter, received the following answer : 'Of seven peasants I can make as many lords, but God only can make a Hans Holbein.'

We have already remarked that females do not often pay sufficient attention to the art to excel in historical painting. There are some ladies in our country, who, by their copies of eminent paintings, have discovered a high degree of talent ; and could they have the opportunity of travelling for improvement, of devoting years to the study of the first works, and in the society of distinguished artists, their names might hereafter be enrolled among those who have gained, by the productions of the pencil, a name for future ages. But there are many causes to prevent females from aspiring to eminence in the fine arts, among which may be mentioned their physical constitutions. Few possess the firmness of health to endure years of such unremitting labor as are requisite to form the artist. Angelica Kauffmann became celebrated for her admirable productions, even in Italy, the land of painters. On going to England she received the most flattering attentions, was invited to paint the whole royal family, and made a member of the Royal Academy of the Fine Arts. It was here also that she became the victim of a most cruel revenge. An English artist hav-

ing been rejected by Mademoiselle Kauffman, selected a dissolute footman, of a handsome person and insinuating address, whom he very richly dressed, and caused to be introduced to her as Count Horn, a nobleman of distinction. A foreigner, and imperfectly understanding the language and manners of the country, she became the dupe of this artifice, which was triumphantly disclosed after she had become the wife of the pretended Count. She easily obtained a divorce, but allowed an annuity to the wretch who had lent himself to so base a plot. She died in Rome in 1807, leaving a large fortune to charitable institutions. Angelica Kauffman was highly esteemed by Dr. Johnson and other distinguished literary men, as well as the first artists of the day, and formed one of the most brilliant ornaments of a coterie of ladies, with whom such men were proud to associate. Among these ladies was a Miss Moser, distinguished for the beauty and delicacy of her flower-painting, and who was also a member of the Royal Academy. These are almost solitary instances of females being publicly recognized as artists.

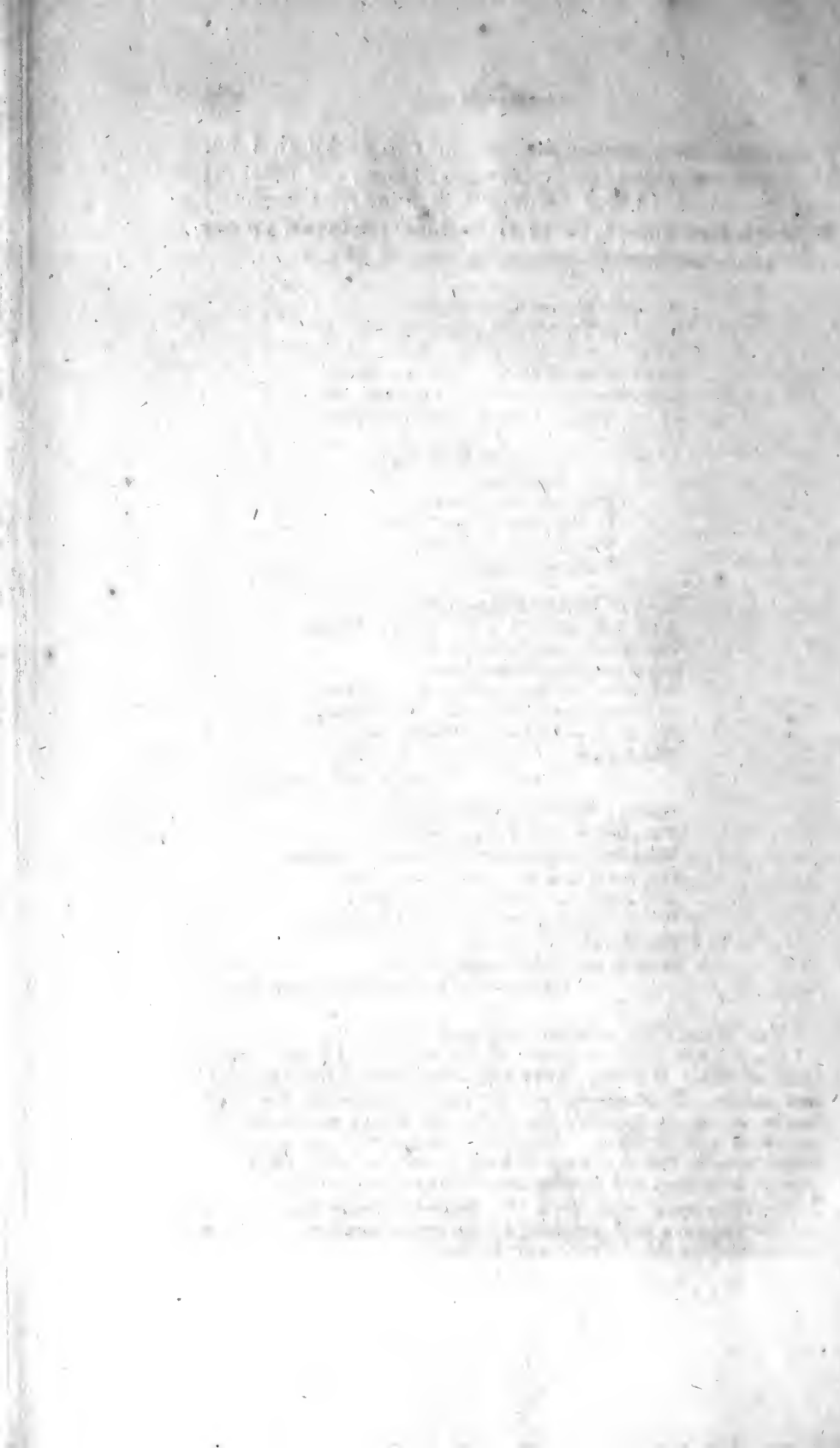
Mrs. Damer, an English lady of high descent, of distinguished beauty and grace, with a mind deeply and richly imbued with classic literature, and the star of the *fashionable* world, became suddenly the votary of the fine arts, especially sculpture. The following is the account given of the trifling circumstance which first caused her devotion to this art. When not over twenty years old, as she was walking with the historian, David Hume, a little Italian desired them to look at some plaster figures. Mr. Hume good-naturedly examined and praised them, giving the boy a trifle for his encouragement. His fair companion afterwards satirically related this in company, with an intimation that a grave philosopher might better occupy his time than in attention to paltry plaster images. Hume gravely replied, 'those images, young lady, were not made without the aid of both science and genius—with all your attainments, you cannot produce such works.' Thus challenged, she privately procured modelling tools, and in a few days presented to her monitor a head moulded in wax. 'This,' said he, 'is clev-

er. You have found it no easy task ; but it is much easier to model in wax than carve in marble.' With a resolution which always attends those who make great attainments, she procured marble and proper tools, and with great ingenuity copied the bust which she had made in wax. Soon after this, the public learned with astonishment that the only and beautiful daughter of Marshal Conway had forsaken the circles of fashion, banished from her mind all pretensions on the score of high birth, and was resolutely seeking to distinguish herself by what she felt to be the only true nobility, works of genius. She was now to be seen in a close cap, to keep the dust from her hair, and a long apron to preserve her damask gown and satin slippers, working in wet clay, or with an iron hammer in one hand and a steel chisel in the other, cunningly carving heads in marble. Although we cannot but admire the energy and enthusiasm of this uncommon female, we still feel that she had stepped out of the legitimate province of woman ; and that it was so, appears from the fact, that with all her efforts and perseverance, she did not attain the rank even of a second-rate artist. Had the same talents and industry been employed in some manner more suitable to the delicacy of her frame, and the duties of her station, how much might she have benefited and improved the world.

We have now, my dear pupils, considered the various branches included in a liberal course of female education. We have seen that the great object in view is not to form beings to dazzle the world with a glittering and transient splendor, but to give to society women with minds strengthened and prepared for the various duties of life, and capable of appreciating and rightly directing their influence. Of these various duties and this influence we shall hereafter treat.

The sphere of woman's duty is to be looked for in private and domestic life ; and although she may and ought to do all in her power to elevate, refine, and embellish all that comes within her own circle, she should be cautious of suffering her desires to extend beyond it. If genius, circumstance of fortune, or I might better say the providence of God, assign to her a more public and con-

spicuous station, she ought cheerfully to do all that her own powers, aided by the blessing of God, can achieve ; and as far as human feelings will allow, act fearlessly of human censure, looking to a higher tribunal for the reward of her labors.



PARTING HYMN,

SUNG BY THE PUPILS OF TROY FEMALE SEMINARY, AT THE
CLOSE OF EXAMINATION, FEB. 16, 1831.

Sisters! We are now to part;
Long we've travell'd hand in hand:
Affections, twin'd around the heart,
Have gather'd close our happy band.
Love has smoothed the rough ascent
Of learning's steep and arduous way,
Giving us as on we went,
A peaceful and unclouded day.

CHORUS.

Partings shall cease,
In the land of the blest;
There may we meet,
Forever to rest.

Sisters! Moments hasten on;
And, yet, our toil 's not wholly done;
Thanks we owe to many here,
For a patient, list'ning ear.
But chief, to *those*, our grateful praise,
In music's swelling notes we'll raise,
Whose watchful and untiring care,
Has help'd to form us what we are.

CHORUS. Partings shall cease, &c.

Sisters! We see a broken band!
For *she** is in a foreign land,
Who first, our grateful love might claim,
Oh, lov'd and honor'd be her name.
And *one*,† the gentle and the good!
We see her not, where late she stood;
Her faithful labors, all, are done,
Heav'n has taken back its own.

CHORUS. Partings shall cease, &c.

* Mrs. Willard the principal, was then in France.

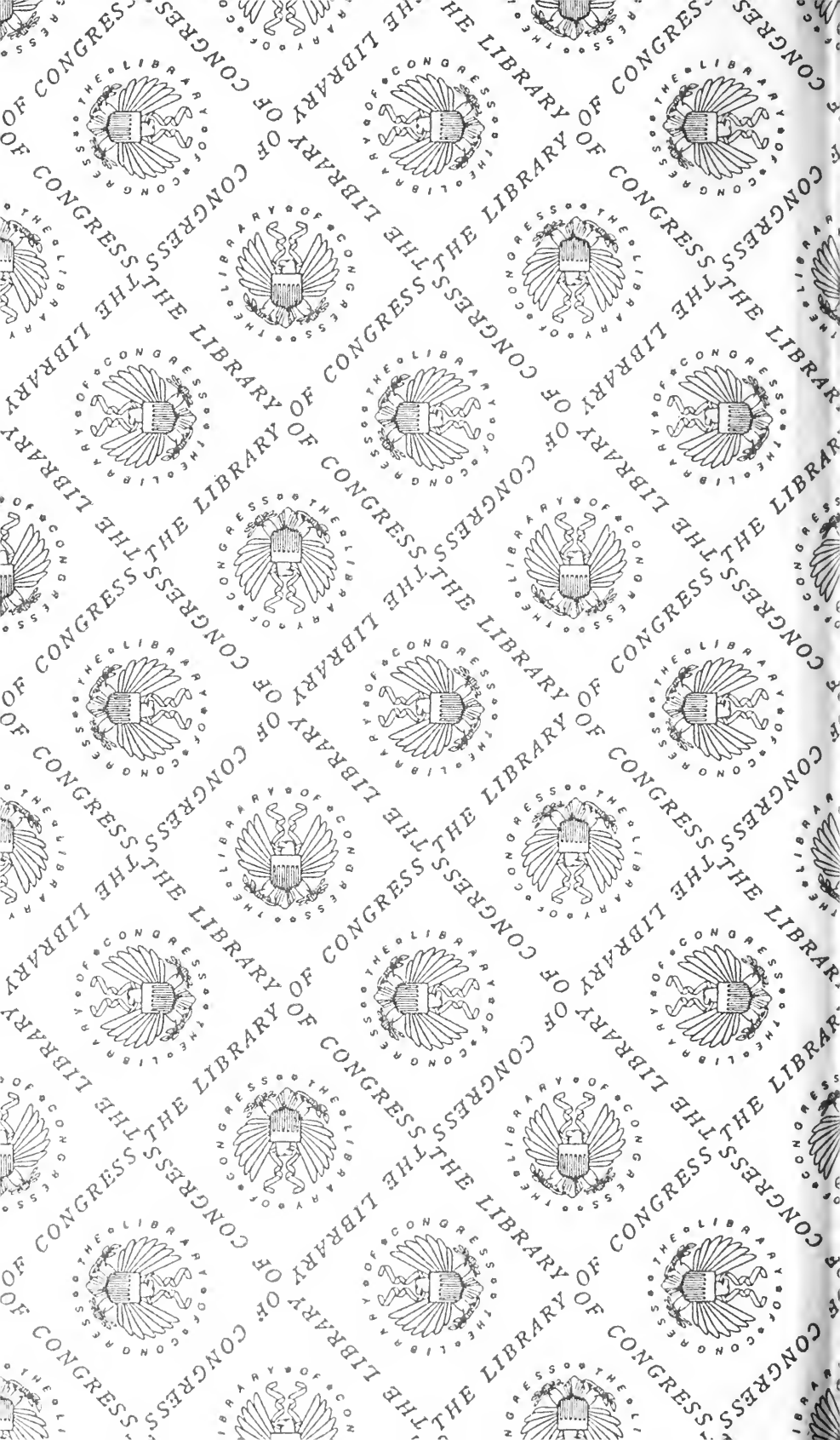
† Mary Lydia Treat, a niece of the author, and the adopted child of Mrs. Willard. After pursuing a thorough and extensive course of education, she became a teacher in the institution, in which capacity she exhibited a rare combination of meekness with decision, a dove-like softness with the most rigid faithfulness in the discharge of duty, a childish playfulness and gayety, with deep and fervent piety.—The examination room was at this time hung with black, the teachers dressed in mourning, and the pupils in half mourning for the recent death of one, whom all lamented as the "*Gentle and the Good.*"

Sisters! Let our thoughts arise,
Upwards to HIM who rules the skies!
To HIM, our blessings, all, we owe,
To HIM, should our affections flow;
Then will he guide our wand'ring way,
To regions of eternal day.
Father in Heaven we bow to thee!
Oh, may our praise accepted be.

CHORUS. Partings shall cease, &c.







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